

*American*

MARCH • 1949

# FRUIT GROWER



HOW  
TO GRAFT  
AND BUD

**My Dad can beat your Dad plowin' ...  
Any time with these NEW—**

# **Firestone**

**LOW PRESSURE**

## **CHAMPION GROUND GRIPS**



**O**F COURSE he can, and at any other farming operation. Why?—because Firestone Champions take a *full-traction* bite all-the-way across that massive, sturdy *full-traction* tread.

Just look at it. Notice how the higher, longer bars are curved and braced for extra bite and extra pull. No wonder they **OUTpull** all other tractor tires.

Underneath those rugged bars is a low-pressure tire body which runs on only 12 pounds pressure. This allows the entire tread bar surface to make full ground contact and deliver every ounce of extra traction that's built into it.

For additional proof, see your Firestone Dealer or Firestone Store.

### **THE 3 RULES FOR MAXIMUM TRACTION**

- 1. USE FIRESTONE CHAMPION TIRES**
- 2. USE FIRESTONE HYDRO-FLATION**
- 3. USE ONLY 12 LBS. PRESSURE**

*Listen to the Voice of Firestone every Monday evening over NBC and Americana over NBC Network Television Stations*

Copyright, 1949, The Firestone Tire & Rubber Co.

**AMERICAN FRUIT GROWER**

for better control of more insects,  
use insecticides containing

# Thiophos

REG. U. S. PAT. OFF.

## PARATHION

developed by American Cyanamid Company

Commercial use of THIOPHOS insecticides on fruit in 1948 confirmed the outstanding results obtained experimentally in 1947. The following are among the more important destructive insects that are killed easily and economically with Wettable Powders and Dilute Dusts containing THIOPHOS Parathion:

APHIDS  
MITES  
THRIPS  
BEETLES  
RED-BANDED LEAF ROLLER  
COTTONY-CUSHION SCALE

ORIENTAL FRUIT MOTH  
WOOLLY APPLE APHID  
PLUM CURCULIO  
PEAR PSYLLA  
MEALY BUGS  
BUD MOTH

The companies whose trade names appear below supply insecticides made from Thiophos Parathion. Select one of these reliable manufacturers as your source of supply, and discuss with an accredited representative your particular problem. Do the same with Federal and State agricultural experts in your locality.



**PARATHION**  
Zeigz Company Inc.  
New York, N. Y.

### CHIPMAN

**PARATHION**  
Chipman Chemical Co., Inc.  
Secaucus, N. J.



**PARATHION**  
Santand Industries, Inc.  
Pomona, Calif.



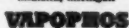
**PARATHION**  
Mas Kil Chemical Division  
Food Machinery Corporation  
Middleport, N. Y.

### PARADUST

**PARATHION**  
Stander Chemical Company  
San Francisco, Calif.



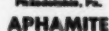
**PARATHION**  
The Dow Chemical Company  
Midland, Michigan



**PARATHION**  
Vapophos Chemical Corporation  
Richmond, Calif.

### PENPHOS

**PARATHION**  
Pennsylvania Bell  
Manufacturing Company  
Philadelphia, Pa.



**PARATHION**  
The Sherwin-Williams Company  
Cleveland 1, Ohio



**PARATHION**  
Insecticides  
Tobacco By-Products  
& Chemical Corporation  
Richmond, Va.



**GENITHION**  
General Chemical Division  
Aldrich Chemical  
& Syc Corporation  
New York, N. Y.

**D2 beats "Gum-Boot" conditions  
on its every-day track shoes!**



Pulling the speed-type sprayer is a member of the Diesel D2 trio owned by Adams County Nursery & Fruit Farms, Aspers, Pennsylvania. The D2 has 5 practical working speeds—to pull the speed-type sprayer at the gait desired.

\* THE SOD IS SOFT and slippery—old wheel ruts are level-full of water.

But there's no delay on spray-day! For the "Caterpillar" Diesel D2 Tractor beats such "gum-boot" conditions on its every-day track shoes.

Long and wide, those broad tracks (with the standard 12-inch shoes) provide 9 square feet of weight-support.



H. G. Baugher, of Adams County Nursery & Fruit Farms, consults D2 operator, Harry Shaffer. "The low operating and low maintenance costs please us well," states Mr. Baugher.

They act like *endless* bridge planks to prevent miring.

And each track has 9 grousers in the soil constantly. That means both tracks keep 405 square inches of pull-bracing, sure-gripping grouser surfaces busy—turning engine power into drawbar pull.

The result is traction so sure you can do 'most any field or orchard job, 'most any time you choose—with the "Caterpillar" Diesel Tractor that fits your needs!

**CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS**

Price of a standard 50 -inch gauge D2 is \$3415.00, F. O. B. Peoria, Ill. and subject to change without notice.

**CATERPILLAR**

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

**AMERICAN FRUIT GROWER**

# Research shows great promise for



Another report from Du Pont on a development of major interest to Apple Growers—New Product now available in limited quantities this year

**"SPRAY NITROGEN"**—the kind that feeds apple trees through the leaves—promises many advantages to growers. This new method of supplying nitrogen to orchards, now made possible with Du Pont "NuGreen" Fertilizer Compound, has already been studied for several seasons in commercial orchards. Following is a summary of the advantages which specialists report for this new development in orchard practice:

**Saves labor and time:** All a grower needs to do is to measure "NuGreen" into the spray tank along with other spray chemicals. Research in New York State shows that when "NuGreen" is used, no application of nitrogen to the ground is needed.

**Helps control fruit set:** If trees normally set too light a crop, "NuGreen" sprays may be started in the pre-pink stage to help get a heavier set. If trees tend to set too much fruit, first application of "NuGreen" nitrogen may be delayed until the calyx spray.

**Better crop:** The amount of nitrogen needed to promote good tree growth and to produce a good crop is easily provided by "NuGreen" sprays. Three or four sprays appear sufficient for most apple trees. Four sprays with "NuGreen" usually are the maximum called for. The amount of "NuGreen" recommended is 5 pounds per 100 gallons of spray solution.

**Better-colored fruit:** By spray application, the amount of nitrogen available to trees can be controlled more accurately to induce good fruit coloration and also to harden off trees for winter.

**Quick response:** "NuGreen" spray nitrogen is efficient. Its absorption by apple foliage starts immediately. Within an hour, a large portion of the nitrogen is already inside the leaf and protected against the leaching action of rainfall. Growth responses, such as increased green color, can often be noted as early as several days after using spray containing "NuGreen."

**Excellent tree health:** Research over 7 years has shown that application of "NuGreen" nitrogen maintains trees in as healthy condition as ground application of nitrogen.

"NuGreen" Fertilizer Compound is a product of the Ammonia Department of E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

## LIMITED AVAILABILITY THIS YEAR

Production facilities for "NuGreen" will be expanded as rapidly as possible so that larger supplies will widen the commercial availability of this newly developed nitrogen compound for apple growers.



REG. U.S. PAT. OFF.

# NuGREEN

REG. U. S. PAT. OFF.

Fertilizer Compound  
**SPRAY NITROGEN**

BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

# "PACKAGED POWER"

## FOR FRUIT AND BERRY GROWERS

### John Deere Model "M" Tractor and Quik-Tatch Equipment

In every fruit-growing section, owners of John Deere Model "M" Tractors and Quik-Tatch equipment are talking about the many advantages of this "packaged power" outfit. "Amazing power in a tractor of its size" . . . "Comfortable" . . . "Easy to handle" . . . "Adaptable" . . . "Speedy" . . . "Equipment for every job" are frequent, enthusiastic comments.

Here in one handy, compact power unit they find the things that have made John Deere tractors so successful in the past . . . simplicity, economy, and long life, plus new adaptability, new comfort, new ease of operation.

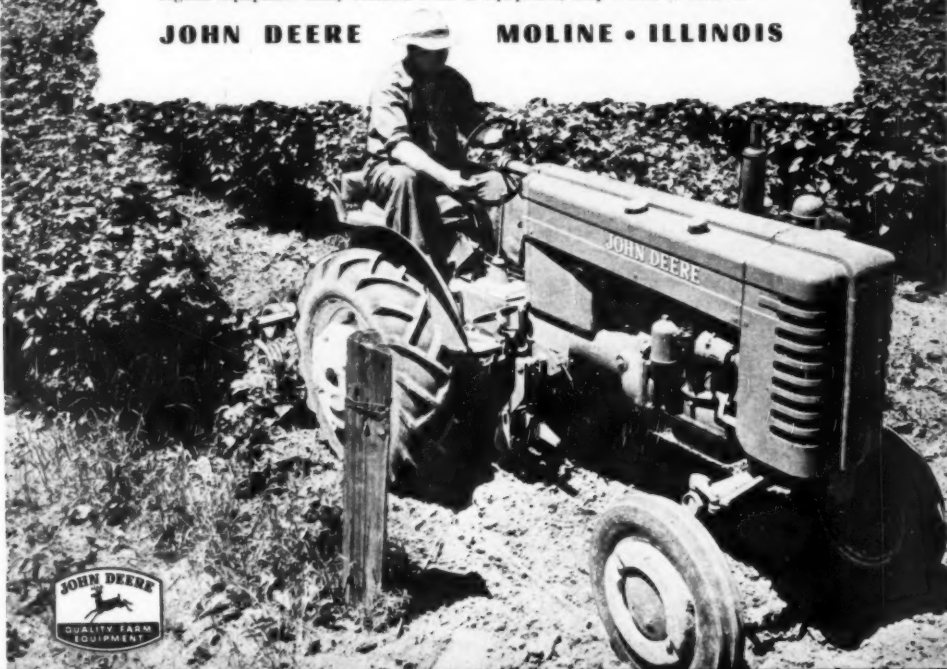
They find the John Deere offers as regular equipment many features avail-

able only as extras on other tractors. There is Touch-o-matic hydraulic control for raising and lowering the Quik-Tatch tools. Adjustable steering wheel . . . adjustable air-cushion seat . . . four speeds forward . . . self starter . . . and power take-off—all are regular features of the "M".

Deliveries are getting better on the Model "M" right along. So see your local John Deere dealer. Get your hands on the wheel, and compare the "M" with other new tractors you know about. Your good judgment will do the rest. For free literature on the Model "M" Tractor and equipment, drop a card or letter to

**JOHN DEERE**

**MOLINE • ILLINOIS**



**A COMPLETE SYSTEM OF FARMING FOR SMALLER FARMS...IDEAL HELPER ON LARGE FARMS**

**"Rain-proof"  
your pesticides**

with  
**Good-rite  
p.e.p.s.**



**Produces more salable fruit...**

**saves work...saves money**



**NEW, EASY-TO-USE "BRICK"**

*Each 4-lb. package of p.e.p.s. contains two heavy-foil wrapped cartridges. Simply unwrap, crumble, dump on screen and wash in with water. Each cartridge makes 400 gallons.*

Good-rite p.e.p.s. is the new, highly adhesive fungicidal "sticker". It resists heavy rains that wash off ordinary sprays. It gives better disease and insect control. It gives better and longer-lasting coverage—makes reduced dosages possible.

This new agricultural chemical, processed in a new way, permits the preparation of a non-injurious and remarkably stable product. It is widely compatible with practically all common fungicides and insecticides . . . increases their effectiveness. It is non-injurious to fruit and leaves . . . resists freezing. All proved in four seasons' tests!

Find out more about Good-rite p.e.p.s.—another B. F. Goodrich Chemical Company development that helps make better results possible at lower costs. Write Dept. AF-3, today for complete information.

**DISTRIBUTORS — DEALERS!** Boost your profit line with Good-rite p.e.p.s. It's winning more and more friends. Write Dept. AF-3 for all the facts.

# Clean Peaches?

## HERE'S HELP... CONTROL Plum Curculio WITH **Chlordane**

### FORMULATIONS

Orchard-proven and recommended by leading horticulturists and entomologists—CHLORDANE has a record of TWO seasons' successful performance in the control of PLUM CURCULIO. At CHLORDANE's new economical price, CHLORDANE formulations will go a long way towards producing profitable CLEAN PEACHES as well as Plums, Cherries, Apples and other fruits.

1. CHLORDANE kills the ADULT Curculio! It KILLS BEFORE the EGG laying period. This prevents egg laying punctures and STOPS damage BEFORE it happens. One female Plum Curculio, if left to live, lays from 100 to 500 eggs!
2. CHLORDANE does not disflavor fruit nor affect its natural fragrance.
3. CHLORDANE reduces the chances of BROWN ROT. It removes the main cause of Brown Rot—the punctures made by the Plum Curculio.

CHLORDANE does not harm trees, foliage or soil, but is actually beneficial because it kills a wide range of other harmful insects at the same time it kills the Plum Curculio. CHLORDANE volatilizes, removing hazards of toxic residue at harvest date. CHLORDANE formulations are easily mixed and pleasant to use.

CHLORDANE formulations are outstanding in the control of the adult Plum Curculio.

### HOW TO APPLY CHLORDANE FORMULATIONS

CHLORDANE, at the rate of 1 pound of actual material in emulsifiable concentrates or wettable powders per 100 gallons of water or as a 5% dust, is usually recommended for control of Plum Curculio. Include in cover sprays or dusts from the time the shucks are just breaking to and including those applications made one month before harvest. Consult your local agricultural authority for best local schedules.

### 100% Increase

in strawberry yields have been reported in widely separated areas from treatment with CHLORDANE formulations. In the strawberry bed, CHLORDANE controls strawberry crown borer, strawberry weevil, spittle bug, Lygus bug, and minute forms below the soil not commonly observed. CHLORDANE formulations are safe to use up to three weeks before harvest.



### KILLS OTHER MAJOR FRUIT PESTS

Such insects as "cat-facing" insects, ants, Japanese beetle larvae, GRASS-HOPPERS, cherry fruit fly, apple maggot, cherry fruitworm, strawberry root weevil and many others are controlled by CHLORDANE.

Write for Circular No. 208A, "Direct Control of Plum Curculio" to Julius HYMAN & Company, Dept. A, Denver, Colo. It contains many useful tables and instructions.

**Julius HYMAN & Company**

DENVER, COLORADO

MANUFACTURERS OF  
OCTA-KLOR TECHNICAL  
CHLORDANE

\*T.M. Reg. U.S. Pat. Off.



When buying insecticides  
be sure the label states  
"Contains Chlordane."

MARCH

1949

VOL. 69

No. 3

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On our cover this month is the Howard 172 Premier strawberry photographed on a farm in Mason County, Michigan. A vigorous productive variety and one of the most resistant to frost damage, it originated with A. B. Howard & Son, Bucktown, Mass. (Photo by Palmer Monkmeyer Press Photo Service.)

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### AMERICAN FRUIT GROWER

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AMERICAN FRUIT GROWER

# T OPS FOR TRACTION



An International Crawler hangs on to hill-sides with *balanced traction* and comes through with powerful drawbar pull just as if it were on level ground. *Balanced traction*—the perfect weight distribution which centers the weight in the center of the tractor—gears Internationals to the ground—makes them ideal for working on the contour. *Balanced traction* does away with nose "heaviness" or "lightness"—keeps both of your tracks in constant,

complete contact with the ground.

Your International Harvester Dealer will show you how balanced traction delivers more of the engine's power to the drawbar where it becomes "pull," and how perfectly-matched IH tillage tools team up with the tractor for a matchless job of cultivation.

See your IH Dealer now. Remember, he's your single source for both power and equipment. His unexcelled service facilities are always at your command.



## INTERNATIONAL HARVESTER

This modern building symbolizes the expanded service facilities of IH dealers throughout America.

• 180 NORTH MICHIGAN AVENUE • CHICAGO 1, ILLINOIS

LISTEN TO JAMES MELTON ON "HARVEST OF STARS" EVERY WEDNESDAY EVENING ON CBS.

MARCH, 1949

BURDEN'S

## Smart idea!

**200 portholes "in the ocean floor" at Marine Studios attract 30,000 monthly!**

**GIANT SHARKS**, tarpon, porpoises, rays and tropical fish live together in two huge tanks at "the world's only oceanarium" at Marineland, Florida. Spectators view this colorful undersea world through more than 200 observation portholes placed in the sides and bottom of the 700,000-gallon capacity tanks. Because violent deaths are a frequent occurrence in the sea world, a special fleet of boats searches for new specimens continually. Douglas Burden, president of Marine Studios, says that a fleet of trucks is required to service boats, tanks, and concessions.



"BIG FEATURE OF THE OCEANARIUM," says Douglas Burden, "is the fact that it gives you an opportunity to see the dramatic and mysterious life of the undersea world approximately as it exists in the open sea. Marine life is not segregated by species, but placed together in the giant tanks containing a coral reef, sunken ship, etc."



**OVER FEEDS A PORPOISE** by hand. These air-breathing, warm-blooded mammals, reputed to be the only captive porpoises in the world, are transported to Marine Studios by Ford Trucks from various points on the Florida coast.



"WE TRUCK OUR SEA WORLD SPECIMENS from as far away as Key West," Douglas Burden (right) tells Ford Dealer, Fitt Barnes. "Our new 145-horsepower Ford F-8 Big Job is just the ticket for long runs like that." Replies Dealer Barnes, "I see what you mean. Ford Trucks specialize on long runs of all kinds. They're Bonus Built to last longer, too. Each of over 130 Ford Truck models from the 145-h.p. Big Job down to the smallest Pickup is built with big reserves of strength."

## BURDEN'S Smart bet!

**FORD TRUCKS LAST LONGER!**

Using latest registration data  
on 5,444,000 trucks, life insurance experts prove Ford Trucks last longer!

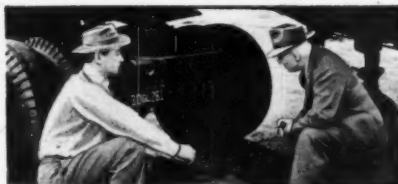
BURDEN'S

## Smart move!

**He uses Ford Bonus Built Trucks in his business. Smart Move! Smart Business!**



"110 GALLONS per minute, handled by the Ford cooling system, sounds small alongside 8,000,000 gallons per day for your tanks," says Barnes, "but it's one reason why this 145-h.p. V-8 is tops in performance."



"WE'RE THOROUGHLY SOLD on this extra heavy-duty 2-speed axle," says Burden. "It gives us the speed and power we want . . . when we want it. Gas mileage in high axle range is amazingly good for this size truck."

# LETTERS TO THE EDITOR

## Short and Sweet

Gentlemen:

Virus disease: a convenient name the experts have for something that they know nothing about.  
Eugene, Ore.

L. W.

And the first ones to agree with L. W. would be the experts themselves! Yet in all fairness it should be said that hundreds of faithful workers have spent years of their lives on these baffling and insidious virus diseases. Much is known, and several excellent books have been written about them. A very good brief treatise is by Dr. L. O. Kunkel of the Rockefeller Institute at Princeton, N. J., and printed by the Michigan Agricultural Experiment Station, entitled "Virus Diseases of Plants, What They Are and How They Differ from Fungus Diseases," which may be secured for the asking from the Michigan Station at East Lansing.—Ed.

## Repelling Deer

Gentlemen:

In one of your past issues, Mr. Jim Spilak of Sorrento, B. C., inquired about a protection for deer damage to his fruit trees. I have a very good friend, an orchardist, who told me he was troubled with deer injuring many of his young trees as well as the matured trees.

A remedy, which he states was 100 per cent effective, is as follows: A good strong paper bag which withstood the weather was obtained and about 5 ounces of moth balls placed in each bag which were tied tightly to each young tree. On the older trees he tied on as many as three or four bags with 5 to 6 ounces of moth balls and his deer trouble ended. I have no reason to doubt my friend as his integrity is irrefragable.  
North Branch, N. J. R. D. Smith

In the State of Washington some growers are achieving partial control of deer by spraying with naphthalene which would tend to substantiate the remedy of Reader Smith's friend. On the other hand, many growers have tried the moth ball treatment with no success. Much depends upon how hungry the deer may be.—Ed.

## A Testimonial on Fruit Juices

Dear Editor:

My letter in your October issue brought me such a tremendous number of letters—one with a dollar bill but no address except Idaho—that I have not yet been able to answer all of them.

This letter is to draw your attention to the value of raw fruit as a diet for the sick. I am 91½ years old and have never had a headache in all my life. Raw fruit in abundance will keep not only children but adults well. Note how California athletes always come out on top, and just because they are raw fruit eaters!

Then, too, there is the alarming increase in kidney disease—*diabetes mellitus*—among children. This is caused by those soft drinks that are largely composed of refined sugar. Yes, a million times better are orange, grapefruit, apple, pineapple, tangerine, coconut, lemon, lime, and other pure fruit juices. Miami, Fla. George Hedden Corsan

Do you remember grandmother scraping a raw apple with a silver knife or spoon and feeding it to you when you had a stomach upset?—Ed.

MARCH, 1949

## Two Grand Old Trees

Dear Sir:

The record of two trees growing at the Agricultural Experiment Station of the Alabama Polytechnic Institute at Auburn, Ala., might be of interest to many of the readers of AMERICAN FRUIT GROWER.

One of the trees, an apple, was received from the Division of Pomology of the Department of Agriculture in Washington, D. C., April, 1897. It was labeled as the Pasman variety and was one of the three trees of 20 Hungarian varieties planted. In its early growth and development, it had the benefit of manure from a nearby mule lot. Records show that by the time, or before, this tree was 10 years old it was fruiting and that it has been a rather regular bearer during the last 40 years. During that time many students at Auburn sampled its apples.

The maximum branch spread of the tree is now 50 feet and its waistline measurement is 50 inches, which means that during the first 50 years of its life it made an average annual growth of 1 inch around and 1 foot limb spread. It is still producing fairly good crops.



The other tree is a good seedling pecan. It was started from a nut planted near an old garden spot by Professor F. S. Earle some 50 to 55 years ago. Records indicate that it averaged about 100 pounds of good nuts annually for the last 20 years. Some years it produced almost 200 pounds. It is now 100 inches around at breast height and has a limb spread of 100 feet. This means that the tree made an average annual increase of 2 inches in circumference and a 2-foot limb spread for the first 50 years of its life. Apparently it has not yet reached its capacity for maximum production.

There are fertile areas around many homes in the South where pecan trees could be grown for shade and for a home supply of good nuts.

Auburn, Ala.

C. L. Isbell

## Too High

Dear Sirs:

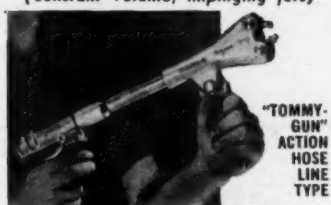
On page 48 of the January, 1949, issue you show a "Handy Andy" guard for fruit trees and say it is 13.7 feet high. How does that work out? That would mean that the leaves on the little tree shown would be about two feet long!

Concord, Mass. Dorothea K. Harrison

Six feet is the height, not 13.7 feet, which is the circumference. Thanks to Reader Harrison for setting us straight.—Ed.

## NEWEST and FINEST ORCHARD SPRAY NOZZLE

(constant volume, impinging jets)



## HURST AQUA-JET NOZZLE

If you want the best spraying job ever—use nothing but Hurst AQUA-JET Nozzles! Surpasses all previous types. Operates on pressures from 250 p.s.i. up. Impinging jets deliver maximum velocity and constant volume for any spray pattern from parallel streams to maximum impingement. Easiest and fastest nozzle you ever used!

1,000 SPRAY PATTERNS at the FLICK of your WRIST!



Angularity of jets changed instantly by means of front hand grip on nozzle. This permits unlimited "working" on the trees with powerful straight stream (or minimum particle, maximum coverage pattern).

MORE TREES PER DAY - LESS SPRAY WASTED - LESS LABOR FATIGUE



No other type of nozzle can produce such practical and fast-working spray patterns! The pattern is even, the volume is constant—the spray shape and length can be changed in less time than it takes to say it!



## BOOM TYPE Nozzle

Identical with hose line type except spray patterns are preset by means of an adjusting knob in place of the hand grip. 2 to 3 nozzles on each side of boom give complete coverage and a far better job of spraying. Equip your rigs in plenty of time for 1949 spraying.

ORDER TODAY!

Immediate Delivery. Sizes 2 to 30 g.p.m. Order by size and pressure.

AQUA-JET Nozzle for use on sprayer boom (F.O.B. San Jose) each \$12.75

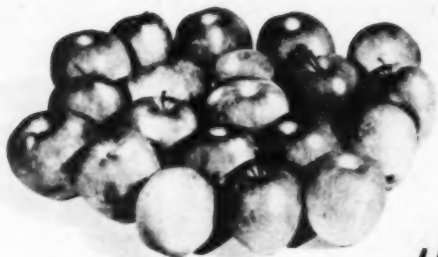
AQUA-JET Nozzle for use on hose line (F.O.B. San Jose) each \$39.50

Sales Territories Available

**HURST**  **Sprayers**

MAKERS OF  
Robin High-  
pressure  
Sprayers—  
Hurst Weed  
Control  
Flex-action  
Boom-type  
Sprayers—  
C.B. Turbine  
Pumps.

HURST INDUSTRIES, INC.  
San Jose, California



# Pack your Apples this better way

to insure  
top prices!

APPLES and other fruits reach market in peak condition, command top prices—when you pack them in **Pliofilm**!

That has been confirmed by careful tests recently conducted in the horticultural laboratories of a large state college. Apples were packed in storage cases lined with **Pliofilm**. Here's what the tests showed:

1. Weight loss reduced to one-half or one-fourth of normal.
2. Number of apples showing shrivel reduced almost to zero.
3. Color and ripeness maintained at appetizing levels one to three times longer than in ordinary storage.
4. Jonathan spot practically eliminated.

The secret of **Pliofilm's** incomparable protection is this: it's air-moisture-liquid-proof. Whether you ship your produce immediately, or hold it in storage, this magic packaging film is unbeatable price and quality insurance.

Strong, durable, puncture-resistant, **Pliofilm** bags are made in all sizes for pre-packing apples, oranges and many other kinds of fruits and vegetables. For information, write: Goodyear, Pliofilm Dept., Akron 16, Ohio.



Everything is better in

# Pliofilm

3-way protection against air, moisture, liquids

**Pliofilm**—T. H. The Goodyear Tire & Rubber Company

## GOOD YEAR

THE GREATEST NAME IN RUBBER

We think you'll like  
"THE GREATEST STORY  
EVER TOLD"  
Every Sunday  
ABC Network

AMERICAN FRUIT GROWER

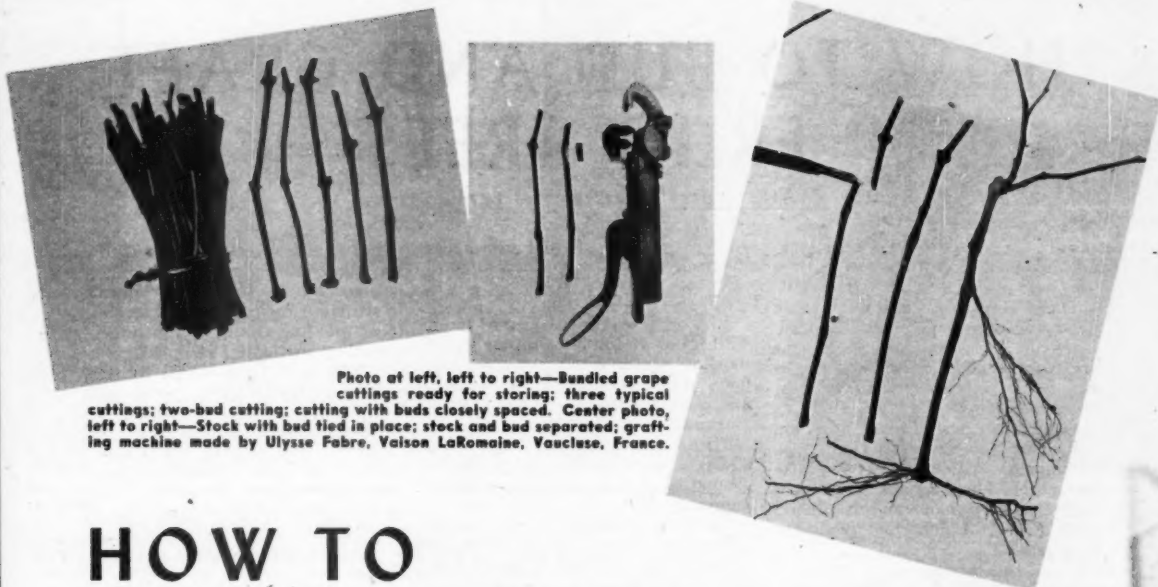


Photo at left, left to right—Bundled grape cuttings ready for storing; three typical cuttings; two-bud cutting; cutting with buds closely spaced. Center photo, left to right—Stock with bud tied in place; stock and bud separated; grafting machine made by Ulysse Fabre, Vaison LaRomaine, Vaucluse, France.

# HOW TO PROPAGATE GRAPES

By KARL D. BRASE, New York Experiment Station

Knife in position for making slot in beveled end of stock; completed graft; successful graft at end of first growing season.

**T**HE ESSENTIALS for a successful vineyard are a well-drained soil, suitable climatic conditions, and carefully selected vines. Scientific tests as well as practical experience have proven that well rooted one-year vines of an extra grade are best, whereas any plant below a No. 1 grade is not worth the labor and expense of planting. One might then ask the question, "How should grapevines for vineyard planting be propagated?"

Since many grape varieties, although by no means all, strike roots rather easily, it is possible to propagate them by so-called hardwood cuttings, made from the dormant canes of the preceding growing season. In making such hardwood cuttings, certain precautions must be observed. Thus it is preferable to use freshly-cut canes which are not over-vigorous. Cut canes that have been left in the vineyard for some time will quickly dry out and will become unsuitable for best results. Similarly, winter-injured wood should never be used.

As soon as the vines are fully dormant, which may be in late November or early December, the canes are cut in the vineyard and stored in a cool, moist storage place where they can be cut during the winter into sections of fairly uniform size, the bottom cut being made just below a bud, whereas the cut at the top is made at least one inch above a bud. The length of the individual cutting is not as important

**Grafting vines onto special rootstocks can give amazing yield increases, but successful propagation is difficult.**

as the number of buds. For out-of-door planting and rooting, cuttings with at least three buds are preferred, whereas when rooted in a greenhouse cuttings with two or even one bud can be used.

For convenience in handling, the cuttings are sorted according to diameter (about  $\frac{1}{4}$  inch diameter being the most desirable) and length, and tied in bundles of 50 each. Care should be taken that all face the same way. Such bundles are best stored basal end down in a cool, frost-free storage cellar, where they are completely covered with a moist medium such as clean new sawdust or peat moss.

Planting in the nursery must take place in early spring as soon as soil conditions permit. Planting methods may vary in different localities or with the planting tools at hand. In most cases a deep furrow is plowed out and the cuttings are set at uniform distances along the straight side in such a way that on filling the furrow with soil the uppermost bud will be just above the soil surface. It is most important that each cutting is in good

contact with the soil which is best accomplished by tramping the soil around the base of the cuttings. Rooting can be increased and strong root systems near the basal end have been obtained by spreading well moistened peat moss in the bottom of the planting furrow and placing the bottom ends of the cuttings in the moss.

Under the most favorable field conditions about 50 per cent of the cuttings planted may produce salable plants. Growth of rooted cuttings in turn depends on the care given them after setting. Raising grapevines for vineyard planting from hardwood cuttings is the least expensive and most commonly used method.

It is not always desirable to plant own-rooted plants that are grown from cuttings because in some varieties vines on their own roots may lack the necessary vigor to produce strong shoot growth favorable for the production of heavy crops. In such cases grafting the variety onto special rootstocks is the preferable propagation method. However, grafting grapes is not as common as is the grafting of tree fruits, nor as easily done as commonly described.

In grafting one detaches and inserts a scion having one or several buds of a desired variety on another closely related plant, called the rootstock or, in short, the stock. The essential points in grafting are: That the cam-

(Continued on page 40)

# HOW TO BUD AND GRAFT FRUIT TREES

By D. S. BLAIR, Central Experimental Farm, Ottawa, Ontario

**T**HE OPERATIONS of grafting and budding, more than ever before, are most essential in fruit tree cultivation. Their uses should be more generally appreciated and applied. With orchard maintenance costs at an all time peak, it is necessary to maintain high yields of varieties in popular demand.

Contrary to general belief, no magic is required in the art of fruit tree propagation. As all methods of grafting and budding are forms of tree surgery, sharp tools and continued practice are the important requisites to success.

## Bridge Grafting

Damage to bark on the trunks of orchard trees is a common occurrence. It may be the result of careless handling of orchard implements, chafing by wire guards, or girdling by mice or rabbits. Whatever the cause, such injuries in most cases can be repaired by bridge grafting without ultimate loss of vigor or productivity of the tree. However, in the case of young trees under one and one-half inches in diameter, which have been completely girdled by mice and rabbits, the better policy is either to replace them or to cut off the trunks below the injured area and side graft them.

If the girdled area is sufficiently above the bud or graft union that a length of uninjured trunk remains below the injury, then the trunk should be cut off just below the girdled area. Strong shoots will usually arise from the stub which is left, the strongest of which should be kept to

form a new trunk and all others removed.

## Inarching

The orchardist is frequently faced with injury to the below-ground portions of orchard trees, caused by pine mice, collar rot disease, or winter-killing of the roots. In the case of pine mice the bark may be completely eaten off the main anchor roots for a distance of several inches below ground level, making bridge grafting impracticable.

With collar rot, the disease enters at the graft union and travels down to the very tips, killing the entire root system and in some cases also extends up the trunk for a considerable distance.

Root killing is caused by unfavorable environmental conditions during the winter months. In such cases the tree would die within a year were it left in its injured state.

Fortunately, trees damaged in this way can be saved, and will eventually be none the worse for their injury, by inarching the tips of small seedling trees into the trunk of the injured tree, thus providing a completely new root system through which the tree will henceforth receive nourishment. This is accomplished by planting the seedlings around the base of the injured tree and grafting the trimmed tips of these into the healthy tissue above the injury. Trees that have been injured by grass fires can be saved by this same means.

(Continued on page 44)

## FRAME-WORKING



Grafting and budding tools. 1—Fine-toothed saw. 2, 3, 4—Budding, grafting, and pruning knives. 5—Grafting tool. 6—Pruning shears.



Pear tree of undesirable variety, about to be grafted over to preferred variety.

## SHIELD BUDDING



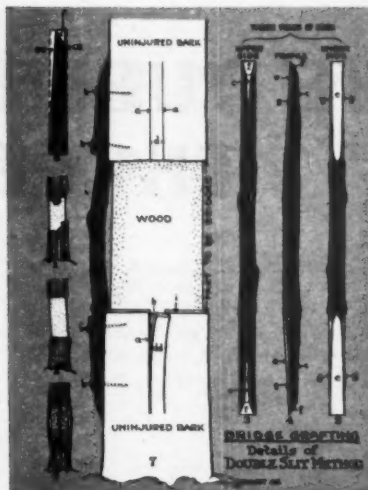
Leaves are stripped from budsticks immediately after gathering, leaving  $\frac{1}{4}$  to  $\frac{1}{2}$  inch of leaf stem for handle. Mature buds are used. To prevent drying, butts of shoots are placed in water until just before using.



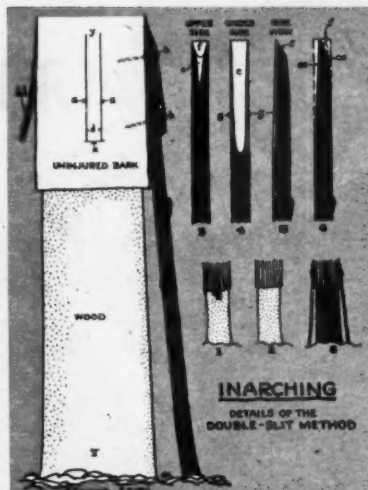
To prepare scaffold limb for inserting bud, horizontal cut is made through limb bark 12 inches from trunk by pressing and gently rocking knife against bark. From center of this short cut, a  $1\frac{1}{2}$  inch long downward cut is made.



The two angular bark flaps are lifted by inserting the tapered handle of the budding knife beneath the bark and the wood. Buds are inserted into the underside of the scaffold limb to insure a more spreading tree.



1—Trunk of young tree after girdling by rabbits or mice. 2—Bark edges trimmed. 3, 4, 5—Three views of type of scion for double-slit method. 6—Detail of cut faces. 7—Trunk with one scion inserted; two flat-headed  $\frac{1}{4}$ -inch nails through each end. 8—Bridges in place at intervals of 2 inches.



1—Mouse girdled trunk of young tree. 2—Bark edges trimmed. 3, 4, 5, 6—Tip of seedling prepared for double-slit method. 6—Detail of cut faces. 7—Trunk with seedling inserted. 8—Seedlings in place, 6 inches apart. Emulsified asphalt on points of connection and exposed trunkwood prevents drying.



McIntosh tree saved by inarching after trunk had been severely injured by a grass fire. This was accomplished by planting the seedlings around the base of the injured tree and grafting the trimmed tips of these into the healthy tissue above the injury. Details of this procedure appear in drawing to the left.



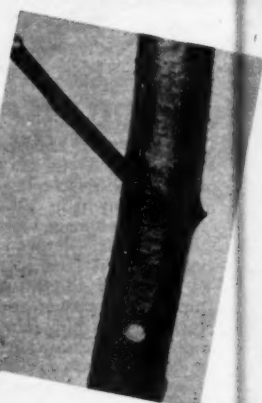
Same tree after removal of all but main scaffold limbs. Into these, scions will be inserted.



Scions inserted. In this case some 100 scions were used. Method is known as "oblique side-graft."



Amount of growth normally occurring in one growing season is evident on this frame-worked tree.



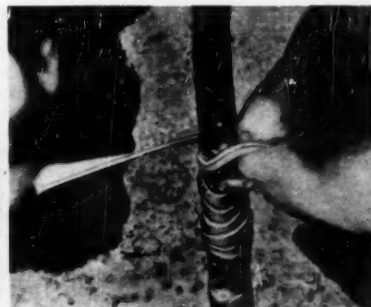
Close-up of an oblique side-graft. Cut into limb was made with heavy knife.



With buds pointing forward, budstick is now held with forefinger under bud to be removed. Knife is inserted  $\frac{1}{2}$  inch above bud and, cutting just enough to remove shaving of sapwood, knife is drawn under bud to  $\frac{1}{2}$  inch below.



Holding budshield by the short length of leaf-stem, the lower end of the shield is inserted under the bark flaps on the scaffold limb and pushed downward until the shield is completely covered.



A rubber band or raffia is used to keep bud and limb in intimate contact and to prevent drying out. Actual bud is left exposed. In spring following insertion of bud, limb is cut back as soon as bud has "taken."

# THE QUEEN THREE

How brown rot, the plum curculio, and the Oriental fruit moth work together against the peach grower.

By ERIC SHARVELLE and C. L. BURKHOLDER  
Purdue Agricultural Experiment Station

**P**EACHES have justly been called the queen of fruits, but Her Majesty's life has been made most miserable by three knaves—brown rot, curculio, and Oriental fruit moth.

When Her Majesty begins to show pink in the spring and the weather turns cloudy and rainy, millions of imp-like spores spring out from the mummied peaches on the ground and from mummied fruit and cankered twigs on the trees. In less than a week the beautiful pink petals are covered with a shroud of disfiguring white threads. These fungus threads not only kill the blossoms but wend their wily way into twigs and branches and lie in ambush waiting for a cloudy, rainy week to enter the green peaches in mid-summer.

On the other hand, if there is no rain and the skies are clear, the brown rot mummies and cankers remain barren and fail to raise their families of brown rot spores. Even if they were capable of producing spores we have found that the blossoms would still be safe because the spores, too, must have moist, humid weather to germinate and penetrate into the blossom tissue. So let's take time to discuss a few facts which should make peach growers more weather conscious during the period from first pink to petal fall.

During the peach blooming season

at Lafayette, Ind., in 1948, a series of blossom inoculations was made in the orchard. A heavy suspension of brown rot spores was sprayed on buds in both the pink stage and full bloom. In some cases the buds and blossoms had been previously covered with one and one-half gallons of liquid lime sulfur to 100 gallons of water, while still other branches were inoculated and then sprayed 24 hours later. This work was done from April 18 to 20 but the skies were bright and sunny and no rains occurred from April 14 to April 23. Now what do you think happened to these blossoms? You're wrong! Not a single blighted blossom was found on any treatment, including the checks!

In order to continue the study we called on Stanley Johnston of the Michigan Substation at South Haven and he sent us several large boxes of peach branches with the buds at the pink stage. The same treatments, using the same spore suspension, were repeated in the laboratory but under high moisture conditions. Severe blossom blight developed from the inoculations both at the pink stage and in full bloom.

Other groups of blossoms were sprayed with liquid lime sulfur, one and one-half gallons to 100 gallons of water, allowed to dry, and then inoculated. This spray film prevented

93 per cent of the infection at the pink stage and 92 per cent on the blossoms sprayed in full bloom. However, when the blossoms were inoculated and spraying was delayed for 24 hours, blossom blight was reduced by only 64 per cent at the pink stage and 86 per cent in full bloom.

Most peach men also grow apples. All apple growers know the danger of severe losses from apple scab during prolonged periods of rain and high humidity. We seem to have been lax in realizing that the same type of weather conditions is ideal for peach blossom blight infection. Frequent thorough coverage with liquid sprays or sulfur dusts during the pink and in-bloom period thus becomes our first line of defense against blossom blight!

Now enters another partner in crime in the form of Knave No. 2! The curculio knaves begin to make egg laying punctures. Soon the in-



Purdue University effectively dramatizes the threefold action of curculio, Oriental fruit moth, and brown rot through the cartoons of Prof. G. E. Lehker, extension entomologist, as shown above. Prof. Lehker is widely known throughout his home State as a "chalk talk artist" and seldom appears before growers without his easel and crayons. The cartooning professor insists that drawing is just a hobby but admits that it helps considerably to tell the story of insects and their control.

AMERICAN FRUIT GROWER

# N OF FRUITS AND THE E KNAVES . . .



Brown rot infection in early spring takes the form of white threads, or mycelia, on the peach blossom, as shown at the left in photo. These fungus threads wind their way into twigs and branches and, when weather conditions are right, into the green fruit.

festated fruit drops to the ground where some specimens eventually start to rot and are a fertile source of summer brown rot spores. The curculio larvae from the drop fruit enter the ground and soon develop into adult beetles which in many intermediate and southern peach growing areas again attack the fruit several weeks before harvest.

During the six-week period before harvest Knave No. 3 puts in an unwelcome appearance! Oriental fruit moth larvae begin to leave the twigs and enter the fruit. Either second brood curculio or Oriental fruit moth may provide thousands of perfect openings for the entrance of brown rot.

In our field work with many different soluble and insoluble fungicides we have found none that will completely prevent serious development of brown rot in the orchard and in transit if curculio or Oriental fruit moth control is poor. To illustrate the role of insects as brown rot partners, let's take a large mature peach block in southern Indiana where the crop

was almost a complete loss from brown rot in 1947 as a result of the combined attack of "The 3 Knaves". At blossom time in 1948 this orchard had a severe attack of blossom blight. At petal fall the Purdue Experiment Station took over seven acres and applied four sprays containing one pound of actual Chlordane to 100 gallons of water on April 15, April 26, May 7, and May 15. On the remaining 15 acres the owner used BHC (benzene hexachloride) dust, six one-side applications during the period from April 15 to May 25. On May 15 jarring records gave an average of five adult curculio to the tree in the Chlordane plot and 29 adult curculio to the tree in the BHC dusted area, which is about a typical jarring record of tree population of curculio in the two blocks beginning April 26.

On June 2, J. J. Davis and G. E. Lecker of the Purdue Entomology Department picked up and scored the drop fruit in both plots. In the BHC dusted area there were a total of 274 drop fruits under six random trees. Ninety-five per cent of these fruits

were stung and 33 per cent wormy. In the Chlordane sprayed block all of the drops were picked up under 60 trees—a total of 185. Of these 48 per cent were stung and 24 per cent wormy.

Both blocks received three cover sprays of three quarts of liquid lime sulfur to 100 gallons of water during the preharvest period. Three sets of harvest fruit samples were taken from each plot, spread out on tables, and kept at room temperature. The average for the BHC dust area was seven per cent rot after one day, 12 per cent after two days, 21 per cent after three days, and 28 per cent after four days. For the Chlordane sprayed plot, where the control of curculio had been much better, the average was one per cent after one day, two per cent after two days, seven per cent after three days, and 13 per cent after four days.

We have heard the statement many times that the elimination of brown rot is a matter of curculio and fruit moth control. However, there are many cases of severe outbreaks of brown rot at harvest where no blossom blight and almost no curculio or moth injury had occurred. For example, the peach growers in Kansas had no crop in 1947, no rain during the entire pink and bloom stage, and almost no injury from curculio and fruit moth; nevertheless, when a prolonged rainy period began on July 5, 1948, many growers lost 30 to 70 per cent of their peach crop.

So enters the Joker in the form of old man weather! From somewhere, somehow, enough brown rot spores appear to cause a serious brown rot epidemic if a prolonged rainy period occurs several weeks before and during harvest. Infection can take place on maturing fruit without the aid of skin punctures. On the other hand, in our work in 1948 hundreds of nearly mature Halehaven peaches were dunked in a brown rot spore suspension and left on the trees. The weather, again, was clear and sunny and not a single dunked peach developed brown rot. But, when the skin was punctured before dunking, brown rot developed on nearly 100 per cent of the fruits.

So, after living with brown rot for 70 years the entire story of its life and loves is not known. Several missing links must be added before the chain is fully forged.

Even when almost no brown rot appears on the fruit in the orchard very serious losses frequently occur in transit and during distribution. We have been especially interested in this phase of the disease for the past two seasons. Frequent sprays or dusts during the four to six-week period

(Continued on page 36)

**"RAIN AND WARMER"** is the kind of spring weather forecast which starts tractors, assembles crews, and speeds an army of sprayers and dusters to battle with insects and diseases. Yet, too often the vital signal of the weather forecaster is delayed or not available.

MONTH		YEAR													
DATE	DAY	WIND	WIND SPEED	REL. HUMID.	CLOUD %	WIND DIR.	WIND SPEED	PRESSURE			PRECIPITATION	GENERAL WEATHER (Clouds only)	FORECAST FOR NEXT 24 HOURS		
								MEAN	MIN	MAX					
Jan 1	Mon	20	66	66	66	210	8-20	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 2	Tues	10	64	78	78	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 3	Wed	10	70	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 4	Thurs	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 5	Fri	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 6	Sat	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 7	Sun	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 8	Mon	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 9	Tues	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 10	Wed	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 11	Thurs	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 12	Fri	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 13	Sat	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 14	Sun	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 15	Mon	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 16	Tues	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 17	Wed	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 18	Thurs	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 19	Fri	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 20	Sat	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 21	Sun	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 22	Mon	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 23	Tues	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 24	Wed	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 25	Thurs	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 26	Fri	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 27	Sat	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 28	Sun	10	64	80	80	210	8-17	29.80	29.80	29.80	0.00	Drizzle	Drizzle - cloudy		
Jan 29	Mon	10	64												

instruments plus daily weather charts and several bulletins and circulars of background information from the U. S. Weather Bureau which can be obtained by writing the Superintendent of Documents, Washington 25, D. C.

a sheet called "Cloud Forms," which is also available from the Weather Bureau.

In the column for wind, I list the direction from which the wind is blowing. An ordinary wind vane is suitable for this. For the atmospheric pressure I read my barometer to the nearest hundredth of an inch and also mark down whether the barometer is rising or falling.

Finally, I mark down the precipitation, if any, at the time of the reading and also the general weather conditions, such as foggy, hazy, gloomy and dark, threatening, clearing, etc.

In the last column I make my forecast for the next 24 hours. In making a forecast I look over my readings for the day and then look over the U. S. Weather Bureau Daily Weather Maps (W. B. 1901) which I receive daily in the mail from the U. S. Weather Bureau. These maps indi-

C. W. Corey is editor of Taylor Technology, Taylor Instrument Companies, Rochester, N. Y.

Next, I list the kind of clouds at the time of the reading. The Weather Bureau booklet, "Cloud Forms," (W. B. No. 956 Rev.) explains the various types of clouds, and for convenience I have tacked up on the wall



Photos courtesy Esso Farm News

Left—Thermometers in shelter boxes in the orchard are exposed to the north. Above—Jack Frost finds working conditions difficult in orchards heated as in this scene.

## WHAT I LEARNED ABOUT ORCHARD HEATING

By J. FLINT WALLER

**T**YPICAL commercial orchards in Virginia are on gently rolling or steeply rolling hills or ridges. These locations often lack sufficient elevation over the surrounding areas to be immune from dangerous frosts at or near blooming time. In fact, in four of the last six years the fruit crops in many of our orchards were materially reduced because of frost.

The question then arises, "Is it practicable to heat Virginia orchards?"

In the last two years a number of growers, deeply concerned over their previous losses, resorted to heating the low sections of their orchards. They used, principally, fuel oil in cans or oil heaters.

Our own orchard heating experience over a period of several years has brought out two aspects to the problem. We have found that it is comparatively simple and inexpensive to protect our orchards from temperatures between 32° F. and 26° F. But temperatures near blooming time sometimes range between 26° F. and 20° F! To protect the trees from the lower range of temperatures requires a greater amount of heat per hour, more hours of heating, and more fuel.

Four gallons of oil per tree in the lower parts of the orchard we have found will give protection in the 32°-26° range, while eight gallons are needed for the lower range of temperatures. On many nights during the three-week danger period no heating may be needed. On other nights, heating will be required for

from one to eight hours for apples and up to 12 hours for plums, cherries, and peaches, as these fruits bloom earlier than apples and hence are more subject to injury from sustained low temperatures.

Flexibility, therefore, is a requirement in heating an orchard and it is necessary to have a supply of small and large heaters.

We have found one-gallon cans from the city dumps inexpensive and satisfactory as containers for use when the temperature drops between the 32°-26° range; but for the 26°-20° range, five-gallon cans are needed. In frost pockets four of the one-gallon cans and one five-gallon can per tree should give both flexibility and sufficient reserve for low temperatures and long burning.

Some growers are buying a nine-gallon western-type heater with sliding top which permits adjusting the

rate of burning. These cost about \$1.65 each in carload lots, delivered, as contrasted with about 25 to 50 cents for four one-gallon cans and one five-gallon can and the necessary squares of roofing paper to keep the rain out of the oil.

Where the nine-gallon heater is used, which has a capacity of about eight gallons of oil, one heater is needed near each apple tree in the frost pockets and low places if the orchardist is to be prepared for the lower range of temperatures. On higher elevations one large heater to every two trees, or on even higher ground, one nine-gallon heater to every third or fourth tree might be sufficient.

One advantage of the large heater is that only one lighting is required per heater location, whereas with the smaller containers as many as  
(Continued on page 23)



Courtesy Esso Farm News

Sprayers serve a dual purpose in orchards where frost is a problem. The spray tanks filled with oil are used in distributing fuel to the heaters. Hose line has quick cut-off.



# NATIONWIDE FRUITS



## BERRIES

● Chemical control of weeds in the strawberry field in wintertime when the plants are completely dormant has been proved feasible and practicable in the Northwest.

The materials used consist of a mixture of Diesel or fuel oil in water, fortified with a dinitro contact herbicide known as Dow General Weed Killer. This fortified oil-water mixture burns down the foliage it contacts, thus killing annual weeds and small grasses but leaving unharmed the strawberry plants as well as perennial weeds and grasses.

A suggested weed control program involving grasses or mixed grasses and broadleaves consists of one and one-fourth quarts of Dow General mixed with 30 gallons of Diesel or fuel oil and sufficient water to make 100 gallons.

If the weed problem is confined only to broadleaved weeds, the recommendation is to use one quart of Dow General with 25 gallons of oil to which is added sufficient water to make 100 gallons.

Depending on size and density, of weed growth, 125 to 175 gallons per acre are required to thoroughly wet all vegetation.

Since small weeds are more readily and economically controlled than larger ones, spraying should be done as soon as the berries are dormant and the weed seeds have germinated. Two treatments during the winter may be desirable—the first one early and the second, if necessary, to control late emerging weeds, just before the berries break dormancy.

Spraying immediately following a rain or heavy dew should be avoided since weeds that are wet may not retain a sufficient amount of the spray to kill them.

In applying the spray with a boom-type weed sprayer, a high pump capacity will be needed to supply a long boom. Pressures from 50 to 200 pounds have given satisfactory re-

sults. The sprayer must have agitation sufficient to keep the oil and water emulsified.

Where the treatment was applied commercially last winter growers found it reduced weeding costs as much as 75 per cent. The need for hoeing will not be completely eliminated. A good weed killing spray followed by one light hoeing often does the job. Cultivation and heavy hoeing after spraying should be avoided as long as possible since these operations usually bring to the surface more weed seeds that will germinate following rains and reinfest the area.

● The red coloring matter in strawberries is known as anthocyanin. It is this red color which undergoes changes when strawberry preserves are held at temperatures higher than 60° to 65° F.

To insure good red color in the preserved product, which in turn generally means a good strawberry flavor and high vitamin C content, the New York Experiment Station advises that excessively high temperatures should be avoided during cooking, that the preserves should be cooled as quickly as possible to 65° F. or lower, and that they should be stored at temperatures below 60°.

Differences in color, flavor, and other characteristics of strawberry preserves can be traced, the Station reports, to differences in the fresh fruit itself and to methods of processing.

● An attempt is being made to process the wild blueberries of Maine and New Hampshire in quantities sufficiently large to warrant modern commercial canning and freezing operations. A pilot plant has been established in Portland, Maine, and farmers having wild blueberry acreage are working hand in hand with commercial processors in an endeavor to make available to pie-makers in particular a delectable product having the natural flavor of the wild berry.

## APRICOTS

● A depressing picture of the apricot situation in California was painted recently by University of California's Warren P. Tufts. Labor costs in 1948 were at an all-time high of 85 per cent of total cash costs as compared with 45 per cent

pre-war. This increase, together with an increase in the cost of every other supply used in the growing of apricots, caused many growers to operate at a loss.

Added to the cost problems is the loss of the export markets for both dried and canned apricots, resulting in increased tonnage available for domestic consumption. Furthermore, mechanization does not seem to fit into the apricot grower's operations, Dr. Tufts stated.

Because of these conditions, many fine old apricot trees, which seem to produce the best fruit, are being removed. Many California orchards are 50 years of age and some are more than 75 years old.

California produces 40 to 50 per cent of the world's total of apricots. In 1948 the California crop was about the average produced the past 20 years, or 219,000 tons. Washington, second in apricot production in the U. S., produced 25,000 tons.

## PEACHES

● Since its introduction in Hawaii in 1946, the Oriental fruit fly has spread so rapidly in the islands that it is now a major pest there. Production of sufficient quantities of even the common fruits for local consumption is prevented, according to the USDA.

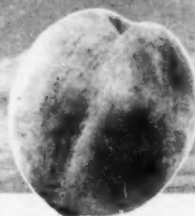
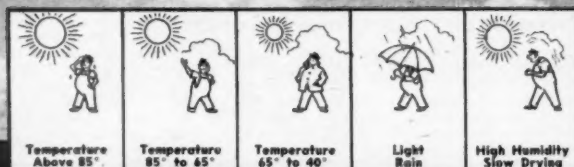
California, alarmed over the possibility of the pest invading the Pacific Coast fruit and vegetable areas, has gone on record as requesting additional federal support for research for natural parasites of the pest and for research for possible other control measures. In addition, the State has asked for transfer from Mexico City to Honolulu of the headquarters of the Division of Fruit Fly Investigations in the Bureau of Entomology and Plant Quarantine and for extension of quarantine safeguards.

● The red-banded leaf roller was an unwelcome visitor in peach and plum orchards in northern Ohio last season. The plum suffered somewhat greater injury than the peach, states Roy W. Ring, entomologist at the Ohio Experiment Station. Plums are injured by the larvae of the insect which feed upon the surface of the fruit and cause it to drop prematurely.

Unlike the small crescent-shaped  
(Continued on page 47)

AMERICAN FRUIT GROWER

# WEATHER FACTORS IN SPRAYING AND DUSTING STONE FRUITS



	Temperature Above 85°	Temperature 85° to 65°	Temperature 65° to 40°	Light Rain	High Humidity Slow Drying	
DITHIOCARBAMATES						
ELEMENTAL SULFUR						
LIME SULFUR				✗		Sulfur burn injuring fruit and leaves at temperatures over 85°. Injury may also occur in light rain. Not safe on peaches after leaves begin to expand except just before harvest.
FIXED COPPERS					✗	Humid slow drying conditions may result in injury to fruit and leaves. Not safe to use on peaches during growing season. Sweet cherries more susceptible than sour.
BORDEAUX					✗	Same as fixed coppers but somewhat more unsafe.
PARATHION			✗	✗	✗	At high concentrations, slow drying conditions or cool weather may cause injury to fruit and leaves.
HETP & TEPP	✗				✗	Rain makes these materials ineffective. High temperatures or slow drying may cause burning.
TOXAPHENE						Injury has been reported on plums but not confirmed.
CHLORDANE						
BHC						May be less effective if applied under slow drying conditions at temperatures lower than 65°.
DDT	✗			✗	✗	May injure fruit and leaves if applied at high temperatures together with high humidity.
DINITRO COMPOUNDS					✗	High temperatures or moist, wet conditions may cause burning of fruit and leaves.
DORMANT OILS*						If trees are wet or if it rains before spray dries, oil may be ineffective against scale and insect eggs.
NICOTINE**						At cool temperatures or during rain effectiveness is decreased.
ROTENONE** PYRETHRUM**						Same as nicotine.
LEAD ARSENATE & SAFENER***	✗				✗	Under slow drying conditions or high temperatures may injure fruit and leaves.



Safe



Caution



Unsafe



Less Effective

\* Oil Sprays should not be applied if temperature is expected to drop below 40° within 24 hours of application.

\*\* Best to apply during conditions of rising temperature, not during falling temperature.

\*\*\* Peaches are very susceptible to arsenical injury which may occur two to six weeks following application especially when period of dry weather is followed by light rain or high humidity with high temperatures. Additional applications to build up deposits of safener may be necessary.

These materials should be used only on specific fruits as recommended in the spray schedule for your State. During the growing season, stone fruits may vary in their susceptibility to injury. For instance, with peaches lime sulfur after bloom would ordinarily cause injury but may be used with care just before harvest. Compiled from observations and best information available, it is hoped this chart will help growers make more efficient use of spray schedules in the production of higher quality fruit.



## • Further Damage from Freezing Temperatures • South Carolina Forms Horticultural Society

**TEXAS**—Cold damage to Rio Grande Valley citrus trees and fruit is incalculable at this time (Feb. 13). The freeze of January 30-31 was the most damaging cold experienced in this area since citrus orcharding became an important enterprise. Most of the trees were completely defoliated and much of the hanging fruit crop was lost. Only time will tell just how much the trees were damaged, and future weather conditions will determine just how much damaged fruit will be salvaged.

It was a hard blow to our industry, but many growers express the intention to build back with more up-to-date varieties on better adapted understocks.—*W. H. Friend, Assoc. County Agent-Citrus, Weslaco.*

**GEORGIA**—In the South Georgia peach section at this writing (Feb. 14) there has been little cold injury to the peach buds. There is an occasional dead bud but no serious damage.

In the Fort Valley area 50 per cent of the buds are still dormant. Most of the remainder are in the yellow anther stage of development. To date there have been 669 hours of cold below 45° F. at Fort Valley. This is approximately 450 hours short of the time required to completely break the rest period in such varieties as Elberta.

At Albany no yellow anthers are showing while at Marshallville the buds are in an intermediate stage between Albany and Fort Valley.

In the middle Georgia peach section there have already been 920 hours of cold and 95 per cent of the flower buds are swollen with approximately 20 per cent kill of the buds to date. A few Elberta blossoms are open.—*Earl F. Savage, Georgia Exp. Sta., Experiment.*

**SOUTH CAROLINA**—From January 4-28 the weather was unseasonably warm—some days the temperature rising to the low 80's—resulting in too much activity in peach buds. Had the chilling requirement of our trees been satisfied they probably would have been in bloom by January 28. However, we had had only 684 hours of temperatures 45° F. and below prior to the 28th and swelling of the fruit buds was slow.

On January 31 the temperature dropped to 24° F. As a result, in Piedmont South Carolina bud killing ranged from an insignificant amount to 80 per cent on Late Elberta. In a few instances buds of Elberta were reported killed to an extent of 50 per cent; however, the overall average ranged from about one to 10 per cent, which does not affect the huge Elberta crop.

At present writing (Feb. 14) the cold requirement has been satisfied for practically all commercial varieties. In addition, the weather is unseasonably warm and we are getting appreciable swelling of buds. The heavy plantings in Piedmont South Carolina are about one month ahead of the average and any sudden drop to well be-

low freezing would cause considerable bud killing. Buds on healthy trees are showing pink and the anthers in all fruit buds are yellow.

Our annual peach meeting was held in Spartanburg, January 12-13. As was previously planned, this meeting was converted into the South Carolina Horticultural Society. M. C. Poole of Cross Anchor became the first president of the society, while Mark Boatwright of Johnston was elected vice-president and Roy J. Ferree of Clemson, secretary-treasurer.

The highlight of the program was a panel discussion on curculio and its control by Dr. O. I. Snapp of the USDA, Fort Valley, Ga.; Dr. Clyde Smith, entomologist of North Carolina State College; Dr. F. F. Cowart, horticulturist of Georgia Experiment Station; and Dr. J. H. Cochran, entomologist of Clemson College.

In summarizing the panel discussion, all agreed that the best spray schedule in 1949 for curculio control was either an arsenate of lead schedule or the petal fall and shuck off sprays with benzene hexachloride, completing the season with arsenate of lead.—*Roy J. Ferree, Sec'y, Clemson.*

**CALIFORNIA**—The full extent of the damage to citrus from below-freezing temperatures since November 1 may not manifest itself for some time. The major portion of the damage occurred since January 1. However, the January 19th report of Paul D. Armstrong, general manager of the California Fruit Growers Exchange, indicates the damage to the crops of grower-members of the exchange.

A total of 25,000 cars of oranges, lemons, and grapefruit is the estimated loss. Since

75 per cent of the citrus fruit in California and Arizona is produced by exchange members, it can be assumed, according to Mr. Armstrong, that the total industry loss would be close to 34,000 cars.

Losses varied widely between varieties and districts. Variance in loss of navel oranges ranged from 3 per cent in one district to a high of 50 per cent in another; lemon losses from 5 to 95 per cent; Valencia loss from practically nothing to 50 per cent; and grapefruit from no loss to 75 per cent.

Much of the damaged fruit can be processed in by-products plants, Armstrong reported, but the salvage value of badly damaged fruit will not be great. Oranges slightly damaged may be used for juice, the most valuable product, but it is expected that there may be a shortage of fruit suitable for juice canning. Essential oils and cow feed offer the major by-products outlet for frost-damaged fruit.

**OHIO**—With the theme "Success in Orcharding" the Ohio State Horticultural Society held its 102nd annual meeting at Toledo, February 9-11.

Dr. Freeman S. Howlett, chief in horticulture, Ohio State University, warned growers that in some respects the fruit business in Ohio is at a crisis. The marked decrease in the number of apple trees in the State definitely indicates that Ohio is going out of the apple business, Dr. Howlett declared. But the future is good if we will get together, he predicted. "Are we going to continue to be an island of individualism in a sea of organized effort?" he asked, referring to organized promotional efforts of growers in other States.

Principal out-of-State speaker was Beverly Byrd, production manager of the famed Byrd Orchards of Berryville, Va., who talked on the problems of producing apples on more than 200,000 trees, 70 per cent of which are color sports four to 18 years old.

(Continued on page 52)

## TENNESSEE LINES UP HER LEADERS



Photographed at Tennessee State Horticultural Society convention, left to right: Prof. G. M. Bentley, Knoxville, 1949 secretary-treasurer; E. L. Brinkley, Signal Mountain, retiring secretary; C. H. Rochelle, Rutherford, director; James Stokely, Newport, vice-president (East); J. C. McDaniel, Nashville, State horticulturist; Julius Sammons, Jr., Whiteville, vice-president (West); J. C. Patrick, Fayetteville, director; and A. C. Jackson, Paris, 1949 president. Jackson, Tenn., was chosen as next meeting place.

# Black Leaf 40



I'LL DO AS DAD  
DID—INCLUDE  
**BLACK LEAF 40** IN  
MY DELAYED DORMANT  
SPRAY MIXTURE

## BLACK LEAF 155

is a dry, "fixed" nicotine compound offering prolonged protection against codling moth (eggs, larvae and adults), leafhoppers, leaf-miners, aphids, and grape berry moth. Acts as a stomach poison as well as a contact poison, yet is relatively harmless to beneficial insects. Non-caustic. Permits full development of foliage and fruit.

## BLACK LEAF 40

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Used at the greentip stage, it destroys the "stem-mother" aphids—preventing the production of countless other generations.

Black Leaf 40 is harmless to many of the beneficial insects which prey upon aphids, red mites and similar pests.

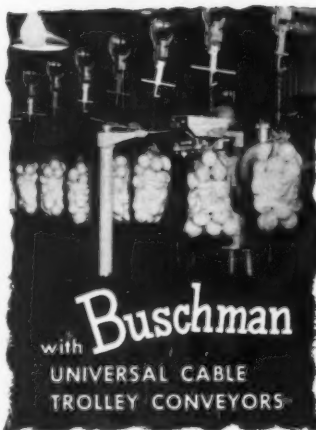
Black Leaf 40 does not injure the tender buds or foliage.

All in all, Black Leaf 40 is SUPREME in this important field of insect control.

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RICHMOND, VIRGINIA

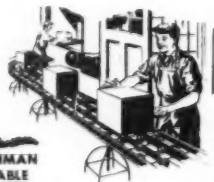
Black  
Leaf

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# MARKETING

## PEACH CROP FORECASTS

• "We're sitting on a keg of dynamite," was the consensus of opinion among growers when asked for predictions of the coming peach crop at the National Peach Council meeting in St. Louis February 22-23. However, delegates from 22 peach growing States went out on a limb and predicted a 1949 peach crop potential of 76 million bushels—10 million less than the crop of 1946 and 10 million over last year's crop.

California's crop was estimated at 33 million bushels—21 million clingstones and 12 million freestones. Second in peach production in 1948, Michigan, already hit by winter injury in the southwest corner of the State, estimates 3½ million bushels. South Carolina, 20 to 30 days ahead of normal at the time of the meeting, predicted 6½ million bushels. Since winter cold requirements vary for different varieties, Georgia is faced with a peculiar situation in that early blooming varieties may fail to bloom if warm weather continues. But a snap of cold weather may satisfy the cold requirement, thus bringing these varieties into bloom; but, at the same time, later varieties might be injured by such a cold spell. Estimate for Georgia was placed at 5 million bushels.

• A session on price supports for peaches included a paper by W. C. Capel of Candor, N. C., who declared that marketing agreements are a must for every grower. In recommending a course of action short of price supports, Capel suggested the establishment of additional farm credit in the form of an emergency loan or disaster fund to tide growers over a period of crop losses, and income tax revisions to allow for the setup of a disaster reserve out of the grower's own funds.

Retiring secretary, Carroll R. Miller, pointed out that crops of 98 million bushels may be expected in future years. "We must get peaches to the consumer in better condition," said Miller. Other objectives mentioned by him included obtaining a suitable peach package and continuing to build co-operative effort between peach-producing areas.

New secretary-treasurer of the council is Dr. M. J. Dorsey, retired head of the department of horticulture at the University of Illinois,

who has long been a popular worker in peach production and marketing. California's Grant Merrill is the new president, Colorado's Oscar Jaynes is first vice-president, and Kentucky's Frank Street second vice-president.

## CHANDLER TALKS ON APPLE PRICE PROPS

• National Apple Institute president, John Chandler, believes that government support for the apple industry might be solved on the basis of finding a home for those apples which formerly went into foreign trade. At the Jersey Fruit Co-operative Association banquet early in February, he said:

"Most of us are inherently opposed to government in business; yet we cannot escape the fact that all our operative costs reflect the influence of governmental determinations in other fields, such as wage floors, transportation costs, priorities, etc. Whether we like it or not, we are launched in a scheme wherein, unless we move to protect ourselves, we will be swamped under a tax load, created to bolster the rest of the economy, which could put us out of business."

What is needed most in the way of support in a long-time program for apples, he said, is automatic provision for absorbing apples that normally go into the export trade.

"Three steps seem important to me in bringing such a program into being: First, a solid front by apple growers behind a definite plan. Second, the creation of a truly representative apple advisory committee to the U. S. Department of Agriculture. Third, the support of a bill to remove the financing of the school lunch program from Section 32 funds. As you remember, since 1935, 30 per cent of customs receipts have been set aside to encourage exportation and domestic consumption of agricultural products. During the war a substantial proportion of these funds were sidetracked to pay for establishing and maintaining the school lunch program. It is to these customs receipts that we must look for any apple subsidies and from them, too, must come the money for practically all perishable agricultural supports. Section 32 funds are hardly sufficient to meet the requirements of their original intent and definitely cannot support the school lunch program, too," he concluded.

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be good to measure up to a farmer's standards! For on the farm, value is what counts . . . and value is what Chevrolet delivers.

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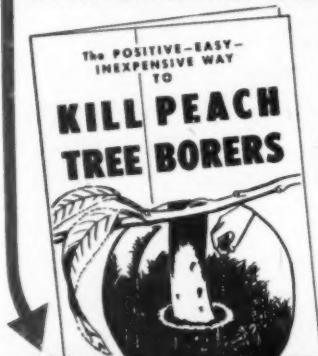


Farmers know that Chevrolet gives a good accounting for every dollar put in. Count up the high-priced car advantages you get at lowest cost in Chevrolet—Certi-Safe Hydraulic Brakes; push-button starter; Hand-E-Gearshift; improved Unitized Knee-Action ride; airplane-type shock absorbers; Box-Girder Frame. You'll agree that Chevrolet is far and away *the most beautiful BUY of all!*

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## NUT GROWERS NEWS

### Annual Report Issued

THE 39th annual report of the Northern Nut Growers Association, Inc., has just been published and mailed to all members. It is available to others at \$3.00. This report, containing the proceedings of last September's meeting at Norris, Tenn., plus other articles of interest, is the largest yet published by the NNGA.

The articles and illustrations, by government workers, commercial growers, and nut tree hobbyists, cover a broad range, both geographically and by species, from filbert culture in Vermont and growing of black walnuts in Alberta to marketing chestnuts on the Pacific Coast and the utilization of honey-locusts in Alabama.

The latter is an example of the tree crops which, while they are not nut trees, are used in "hillculture", a field of agriculture which more or less overlaps both forestry and horticulture and in which many of our members are interested.

### Chestnut Problems

A feature is the "Round Table Discussion on Chestnut Problems". Following several papers on chestnut culture, this brings together some rather complete and authoritative information on growing the blight resistant species and varieties. The commercial extraction of black walnut kernels is discussed by several men connected with that industry, and a method is outlined for obtaining bacteria-free walnut kernels.

Hardiness and climatic adaptation of nut varieties is a problem with most nut species in some areas and with filbert and Chinese chestnut almost throughout their present range of culture. In the Northeast, particularly, an early fall freeze in 1947, followed by very low temperatures in early 1948 made that a test year, and we have reports from New York, New England, Wisconsin, Ohio, and Ontario on the hardiness exhibited by different species and varieties.

These are but a part of the many articles on hardy nut varieties, their discovery, propagation, culture, and uses, which appear in the NNGA report. Part of them will be reviewed more in detail in this column in later months. Meanwhile, any person interested in nut culture in the North Temperate Zone should, I think, find this book a good investment.—  
J. C. McDaniel, Sec'y, c/o Tenn. Dept. of Agr., Nashville 3, Tenn.

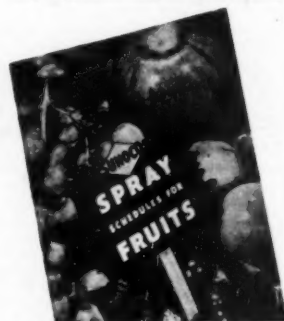
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Sunoco Spray, favorite with orchardists for well over a quarter-century, is easy to use. Just mix with water in the specified proportions. It is economical, too, when applied as directed. Send for your complimentary copy of this helpful booklet today.



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Acreage in fruit \_\_\_\_\_

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## ORCHARD HEATING

(Continued from page 19)

five lightings may be necessary, depending upon severity of the drop in temperature and the number of heaters fired. With the large heater the lid is opened wider as the night grows colder, to increase the amount of heat given off and hold the orchard temperature above 32°.

The number of heaters required for a typical 40-acre orchard of 1400 trees would total about 400 nine-gallon heaters for as many trees in the low parts of the orchard and 400 heaters for the 1000 trees on the higher elevations. A total of 6400 to 7000 gallons of oil would be needed.

### Oil Reserves

It would be good insurance to have another 7000 gallons of oil in reserve at the orchard, for prompt refilling of burners after a night of heavy firing. In 1947, for example, it was necessary for us to fire five nights in succession! The general storage capacity should be large enough to permit the return of unused oil to the storage tank. Thus there should be a storage capacity of about 14,000 gallons for a 40-acre orchard of 1400 apple trees, or 10 gallons of storage capacity per apple tree, or five gallons per peach tree. About half this capacity would be needed if preparations are made for only the 32°-26° temperature range.

It is desirable to have the storage tank or tanks on a hillside, to permit gravity feeding of the oil into and out of the tank. Spray-rig tanks are useful for distributing the oil to the heaters. If used, a two-inch pipe should lead off from the bottom of the spray tank to a hose line equipped with a quick cut-off. For larger orchards, if the gravity method of filling burners is too slow, the oil can be pumped from spray-rig refiller tanks.

### Central Storage Tanks

The investment in central storage tanks of 10,000 to 20,000-gallon capacity sometimes can be kept at a rather modest figure by securing discarded but still usable tanks from oil companies. Such tanks may require repairs. I purchased a 11,000-gallon tank for \$50. It cost me \$150 to have it moved 12 miles to its new location. I inverted this 8-foot by 30-foot horizontal tank and had the manhole bolted shut.

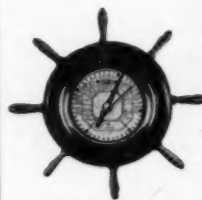
In the West torches burning a half and half mixture of gasoline and kerosene are used for lighting the heaters. In Virginia plumbers' blow-

(Continued on page 30)

## Be Your Own WEATHER MAN

1. Predict Frost
2. Predict Minimum Daily Temperature
3. Predict Rain, Wind
4. Locate New Orchards
5. Predict Best Dusting and Spraying Periods
6. Be Forewarned of Unusual Weather

New Taylor registering "High-Low" thermometer helps predict frost by telling highest and lowest temperatures since last setting, plus temperature now. Tiny steel-cored indicators inside tube stay put till reset with magnet. Helps locate orchards by detecting cold zones. Warns when to start smudge pots. \$10



Taylor Ship's Wheel Stormoguide helps foretell frost and local storms within next 12 to 24 hours. Much easier to use than an ordinary barometer because it gives detailed easy-to-read forecasts for each change in barometric pressure. Handsome walnut case, solid brass spokes, Stormoguide dial and exclusive altitude adjustment. \$15.



\$9.00

Taylor Sling Psychrometer. The scientific instrument weather bureaus use to tell relative humidity. Complete with swivel handle, wet and dry bulb thermometers and protective copper case. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. (Prices slightly higher in Canada.)

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- **Higher yields** from more vigorous trees.
- **Better tree condition** . . . better bud formation for the next crop.

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### Du Pont Also Provides:

**"DEBNATE" DDT**—Exceptional for control of codling moth and many other insect pests of fruit crops—Du Pont's proved formulation.

**"MARLATE" Insecticide**—New, effective, unusually low toxicity. Ideal for pre-harvest sprays. Especially for cherry fruit fly and fruit worm, cranberry insects, many insect pests of peaches, other stone fruits, berries and grapes.

**"ZERLATE" Organic fungicide**—Excellent for brown rot of stone fruits. Light-colored, does not show, yet protects fruit through harvest and shipping.



REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING  
... THROUGH CHEMISTRY

## ORCHARD HEATING

(Continued from page 28)

torches are preferred by some growers, especially where there is the possibility of grass fires being started by the western-type torch. Lightweight flame guns may prove faster than blowtorches and not too cumbersome.

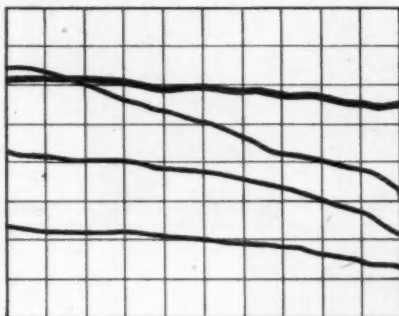
Time is saved in lighting if the burner covers are removed or opened in advance of the firing. Another means of speeding up the lighting when blowtorches are used is to previously "soot" the cans by burning them a short time.

### ESTIMATED PER ACRE HEATING COSTS FOR VIRGINIA

	1947-type year			
	No frost year. Any site No firing	Avg. site 6 firings	Frosty site 9 firings	Nearly frost- free site 3 firings
Oil, 13c gal.....	\$0.65	\$23.40	\$35.10	\$11.70
Labor, 60c-\$1.00 hr.....	3.50	8.50	11.00	6.00
Int. 5%; Depr. 20%.....	2.20	2.20	2.20	2.20
Total.....	\$6.35	\$34.10	\$48.30	\$19.90

## THE LOWDOWN ON INSULATION

**Efficiency  
is as  
efficiency  
does**



Remember the old saying—"Handsome is as handsome does"? Just change that word "handsome" to "efficiency," and you're talking about low-temperature insulation.

The smart insulation buyer realizes that theoretical or laboratory efficiency isn't the whole story, by any means. He wants his insulation to keep on delivering efficiency in his cold room walls.

One of the grand things about Novoid Corkboard insulation is the dependable way it stays efficient year after year in actual service. Our customers keep coming back for more. Satisfaction—not force of habit—is the reason for that.

Of course, Novoid Corkboard is made here in the United States, under strict quality control. And it's installed by some of the most experienced, dependable men in the business. It's about as good a way to keep refrigeration costs down as

you can possibly find. If conflicting insulation claims are bothering you, just write to us. We'll be glad to send you the "lowdown." Novoid Cork, Englewood, N. J.

### CHECK LIST OF INSULATION PROPERTIES

	Novoid Cork Insulation	Many Other Insulations
First cost	moderate	low to high
Installation cost	low	moderate to expensive
Eventual cost	low	high
Efficiency	remains high	generally deteriorates
Moisture resistance	excellent	some good, some poor
Vapor seal	simple	complicated or difficult to install
Structural strength	very good	some non-existent, others fair
Weight	very light	varies
Resilience	considerable	from fair to complete rigidity
Settling	none	a serious problem
Supporting structure	none	elaborate
Fire resistance	good	excellent to poor
Vandal resistance	good	excellent to very bad
Odor absorption	none	some are regular sponges

**Consider EVERY factor  
when you buy insulation**

The special telegraphic weather reports on frost probability and the temperatures to be expected have proved extremely helpful to us. These telegrams, sent collect to grower or to county agent or to both, arrive by midmorning with the prediction for the following night.

On a cold, windless night firing of the heaters should start in the frosty parts of the orchard when the temperature drops to around 35°. On windy nights it is usually wise to begin firing on the windward side of the orchard. If only a light frost is expected, lighting a heater at every other tree in the lower parts of the orchard usually will be sufficient.

The one-gallon or No. 10 cans burn about three hours, or use a quart of oil per hour. A five-gallon open can will burn almost a gallon of oil per hour and thus put out over three times as much heat as a one-gallon can. The nine-gallon heater with sliding cover will burn at a rate determined by the degree to which the cover is opened.

### ESTIMATED AVERAGE HEATING COST PER ACRE, SIX YEARS, 1942-47

The per bushel figures are based on a six-year production average of 250 bushels per acre per year.

Average site.....	\$20, or	\$0.08 per bu.
Frosty site.....	28, or	.11 per bu.
Better site.....	13, or	.05 per bu.

In 1947 we had:

- Two nights of about seven hours of firing, with a minimum of 25°;
- Two nights of four or five hours of firing, with a low of 27° or 28°;
- One night of two hours of firing, with a minimum of 30°.

The labor required under our conditions, where we use one-gallon and five-gallon cans, is one man to about 10 acres to be fired. On a typical 40-acre orchard a foreman would be needed to periodically check the temperature on the thermometers located at strategic places in the orchard and to direct the work of three helpers. For light frosts, less help would be needed. However, the less help, the greater is the need to start firing early so that all necessary fires will be burning in ample time to keep the entire orchard at or near 32°.

Labor is usually cheaper than oil. Some orchardists pay the night men—boys 16 to 25 years of age—at the daily hourly rate while they are waiting and time and one-half for firing. Heating takes place during the busy spray season; therefore, only in emergencies do we call on our spraying crews to work at night.

**AMERICAN FRUIT GROWER**

# If You Need Greater Coverage at Lower Cost... see **FARQUHAR IRON AGE**



## NEW! Iron Age Automatic-Oscillating Spray Head Gives You 2-Sprayers-in-1

... actually makes all Iron Age Sprayers universal. Designed for drive-through jobs with *controlled application*, Iron Age Spray Head assures you greater penetration and better all-around coverage over other methods of high-speed spraying.

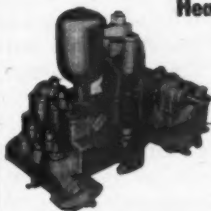
Double Spray Heads are also available. Designed especially for high-speed spraying of peaches, they automatically spray 2 half-rows at once—cut "drive-through" spraying time in half.

## IRON AGE Builds High Pressure Orchard Sprayers to Meet Every Grower's Need

Complete range of sizes and capacities for all orchard, grove or vineyard operators. Rugged construction assures long life, minimum upkeep—streamlined design permits easy passage between rows.



## Heart of Your Sprayer— FAMOUS FARQUHAR IRON AGE PUMP



Long life, slow speed Iron Age Pumps deliver the constant high pressures needed for thorough penetration and complete coverage at lowest cost. High pressure atomization makes every drop of insecticide count. Built in 8 sizes, 6 to 50 G.P.M. capacities, pressures up to 1000 lbs. per sq. in.

See your nearest Farquhar Iron Age Dealer for complete details on the size and model Iron Age Sprayer or Duster you need, or write for FREE descriptive Bulletins on Sprayers and/or Dusters to:  
**A. B. FARQUHAR COMPANY, Farm Equipment Division, 3425 Duke Street, York, Pennsylvania.**

## IRON AGE Offers Growers Complete Line of Orchard Dusters



Iron Age High Velocity Dusters are built in all capacities and sizes to provide quick, low-cost crop protection, no matter what the acreage. Precision built, high-speed blower runs easily, delivers strong, accurate dust blast that assures complete penetration. Power take-off and engine-driven models for orchard or grove use.

**Farquhar**  
**IRON AGE**  
YORK, PA.

POTATO AND VEGETABLE PLANTERS • TRANSPLANTERS  
SPRAYERS • DUSTERS • POTATO DIGGERS • WEEDERS  
CONVEYORS • JUICE PRESSES • SPECIAL MACHINERY  
**PLANT AND SPRAY THE IRON AGE WAY**



for

## Reliable Control . . .

*You can't do better!*

### HI-TEST LEAD ARSENATE

Greater safety and more killing power . . . assured by unequalled guaranteed chemical content:

### CHIPMAN DDT SPRAY POWDER

Contains 50% DDT. Used as water-suspension spray.

### CHIPMAN PARATHION SPRAY POWDER

Highly toxic contact insecticide containing 15% Parathion. Controls aphids and mites on apples and pears.

### BERAKO - Rotenone Spray

Contains 2½% pure rotenone with special wetting agent. Recommended for cherry fruit fly, green peach aphid, and certain other insects.

### COPPER HYDRO

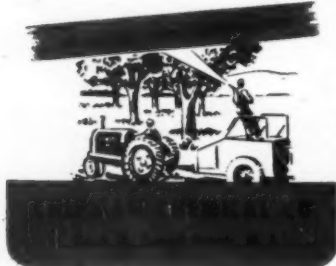
Neutral copper fungicide. Easy to mix . . . quick suspension. Does not clog. Compatible with most insecticides. Controls cherry leaf spot, apple scab, and many other fruit diseases.

### CHIPMAN 2,4-D WEED KILLERS

Available as Amine liquid, Ester liquid and Sodium Salt spray powder.

### ATLACIDE - Weed Killer

Kills all types of weeds and grasses. Destroys roots.



## TRIMMING

*My winter work is pruning trees  
On freezing days or thawing;  
I cut and thin and snip and trim  
And do a lot of sawing.*

*Today I'm trimming apple trees;  
I have a friend to cheer me.  
Although I must look huge to him,  
He doesn't seem to fear me.*

*His name is Charlie Chickadee;  
He's full of bugs and chatter;  
He eats all day, but when night comes  
He's not the least bit fatter.*

*"Don't saw that off," he says to me  
"Until I look it over;  
Dee-dee! Dee-dee! I think I see  
An aphid egg, moreover!"*

*I try between his dee-dee-dees  
To tell him what I'm thinking.  
He cocks his head and stares at me;  
His beady eyes keep blinking.*

*This apple tree, it seems to me,  
Has hide that's weather-bitten;  
In seams and cracks upon its bark  
Its character is written.*

*Can you explain the reason why  
Old apple trees are gnarly?  
What lies behind that seamy bark?  
You know the answer, Charlie.*

*"Dee-dee! Dee-dee!" He laughs at me  
And picks the bark to pieces.  
"Dee-dee! Dee-dee! Look close at me!  
You'll see what's in the creases!"*

*My cheerful chickadee and I  
Work hard each day together  
To help the Lord make perfect trees  
In spite of worms and weather.*

Albert L. Mason

## DR. W. A. TAYLOR DIES

**W**ELL KNOWN in the field of horticulture, and especially to fruit growers, Dr. William A. Taylor, of Lake Ridge Farm, Fennville, Mich., retired chief of the Bureau of Plant Industry, died February 9, at the age of 85.

After graduating from Michigan State College in 1888, Dr. Taylor managed a fruit farm and nursery for three years. He entered the service of the Department of Agriculture in 1891 and was appointed head of the Bureau of Plant Industry in 1913, from which position he retired in 1933.

Dr. Taylor figured prominently in important discoveries relating to the harvesting and handling of fruit which helped make possible the expansion of the fruit industry.

Readers of AMERICAN FRUIT GROWER are well acquainted with Porter Taylor, son of Dr. Taylor, who is now director of the fruit and vegetable department of the American Farm Bureau Federation, Washington, D. C.

Will prices  
go up  
or  
down?



**Either way VIGORO®**  
helps stabilize profits  
year after year with  
larger, top-quality yields!

The problem of showing a good profit at the end of a grower's year is never easy to solve. Yet, even though prices may go down and costs go up — top-quality yields always "pay off." Hundreds upon hundreds of able growers have discovered how important Vigoro . . . complete, balanced plant food . . . can be in improving profits. For Vigoro supplies in ample amounts all the important elements growing things must get from the soil to create both large yields and top quality. Discover for yourself how Vigoro helps.

\*Vigoro is the trade-mark for Swift & Company's complete, balanced plant food.

**SWIFT & COMPANY**

Plant Food Division

U. S. Yards  
Chicago 9, Ill.



AMERICAN FRUIT GROWER

## COMBATING VIRUSES ON SMALL FRUITS IN BRITAIN

**T**HIRTY-FOUR years ago a small group of enthusiasts established the Wye College Experiment Station on 22 acres at East Malling, in Kent, in the largest fruit growing area in England. Today, the East Malling Research Station occupies 360 acres, has well-equipped laboratories, and over 50 research specialists.

The name of Malling is inseparably linked in the minds of many with the so-called "paradise" apple rootstocks, which have received detailed investigation since the founding of the station. The Malling numbered apple stocks have gone to all parts of the world.

But equally important work has been done on small fruits. These fruits suffered from mixtures of varieties and wrong naming, as did the tree fruit rootstocks, but, in addition, virus diseases were found to be seriously affecting black currants, strawberries, and raspberries.

The problem was a straightforward one in the case of black currants, as only one virus disease was involved and it produced the same symptoms on all varieties. Virus-free stocks are now certified and it is illegal in Britain to sell plants that have not been inspected and certified.

### Strawberry Problems

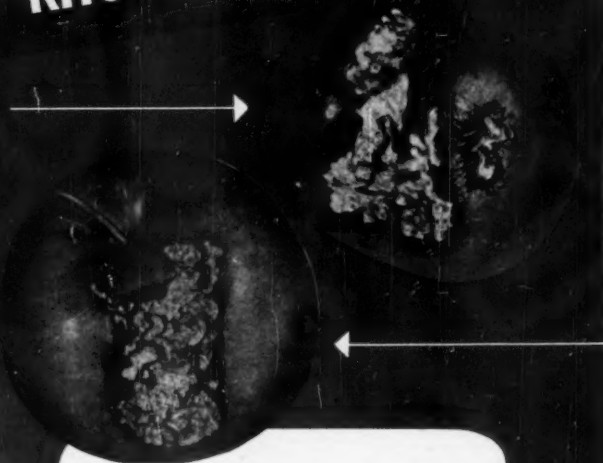
Problems raised by strawberries have been more complex. There are at least four viruses producing two distinct disease types—yellow-edge and crinkle. Furthermore, some varieties of strawberry show no regular symptoms when infected, though the infection gradually reduces the vigor and cropping of the plant. The disease is spread from plant to plant by the strawberry aphid.

The solution to this problem has come from the search for healthy strains of the most important varieties, the health of the parent plants being determined by grafting onto selected plants. Thus a healthy Royal Sovereign plant was obtained from Mayo, Eire, and propagated in an insect-proof house until some 100 runners were produced. These were then further propagated.

The solution of the raspberry degeneration problem is yet to come. There seems little doubt that virus disease is the chief cause. Until recently the only healthy strains available were of Norfolk Giant, not a first-class commercial variety. Now a strain of Lloyd George has been shown, on test, to be virus-free.—*H. B. S. Montgomery.*

MARCH, 1949

# RHOTHANE stops this!



In the Shenandoah Valley, orchards protected by RHOTHANE yielded 85-100% clean fruit, while uncontrolled red-banded leaf rollers were causing 75% injured fruit in neighboring orchards. Experiment Station tests prove RHOTHANE gives almost perfect control (99%).

As a result, the Extension Service in Virginia, West Virginia, Maryland and New Jersey recommended RHOTHANE to orchardists. And in Western New York State, RHOTHANE (DDD) is included in the recommended orchard spray schedule.

One of the safest of the new insecticides, RHOTHANE is only 1/10 to 1/25th as toxic as DDT to man and other warm blooded animals.

RHOTHANE is a trade-mark, Reg. U. S. Pat. Off.

CHEMICALS



FOR INDUSTRY

## ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representations in principal foreign countries

## HOME WEATHER STATION

(Continued from page 18)

cate the weather for the entire United States and parts of Canada and Mexico, and they form the basis for my forecast because they show the kind of weather that is moving toward my locality.

There also are other helpful bulletins available from the U. S. Weather Bureau. These include "Weather Forecasting" (Bul. No. 42), "Barometers and the Measurement of Atmospheric Pressure" (Circular F), "Weekly Weather and Crop Bulletin, and Frost Charts for U. S."

To illustrate a typical forecast, I have listed the various readings for

November 9 and 10, 1948. Based on the observations of Tuesday, November 9, and the weather map for Monday, November 8 (which was received on the morning of the 9th) I made a forecast for November 10.

At 8:30 on Tuesday the 9th I saw that the barometer was falling, cirrus clouds were present, and wind was shifting, coming out of the southwest and increasing. This indicated that a "low" pressure area, located over northern Texas the day before, was moving toward the east with the front located to the west.

By 4:30 p.m. Tuesday the sky was covered with alto-stratus clouds, the barometer was still falling and was near 1011 millibars which was ap-

proximately the value of pressure in the "low." This meant that the front was near and there was a good chance of having rain. The relative humidity was increasing.

On the basis of these two sets of observations I forecast rain, continued warm, and continued cloudiness. I thought perhaps the front might pass sometime Wednesday afternoon. The front actually passed early Wednesday morning as indicated by the rise in the barometer and the drop in temperature; however, the rain continued all day Wednesday in the cold air behind the front as it moved on towards the northeast. The rain stopped Wednesday night and the weather Thursday, November 11, was colder with scattered clouds and rising, then steady, barometer.

Naturally, this forecast was based to some extent on weather experience. On the other hand, the average person can make a similar forecast after sev-

## SAVE PLENTY... AT DEY STREET NURSERY! ...every item TOP quality...at BOTTOM price!

Special, advance arrangements with some of the country's finest growers enable us . . . and you . . . to benefit by these honest-to-goodness LOW prices on TOP quality items.

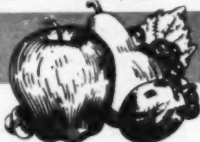
### GUARANTEED TO BE DWARF FRUIT TREES

Ideal for any size home garden or orchard . . . these early bearing trees are easy to locate, easy to care for and easy to pick! Blossom in the Spring and bear large, fancy fruit.

APPLE—Red Delicious, King David, etc.  
PEAR—Bartlett, Hardy, But-terpear  
PLUM—Elberta, Rochester  
CHERRY—Oxbart, Bing, etc.  
APRICOT

2-yr. old \$3.25 ea.; 3 for \$9.00	3-yr. old \$4.50 ea.; 3 for \$13.50	4-5-yr. old \$6.50 ea.; 3 for \$18.00
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### STANDARD



### FRUIT TREES

APPLE—Delicious, McIntosh, Baldwin

2-yr. old, 5-6 ft. \$1.00; 5 for \$4.50

3-yr. old, 5-6 ft. \$2.50; 3 for \$7.00

PEAR—Bartlett, Kieffer, Beurre Bosc

2-yr. old, 5-6 ft. \$1.50; 3 for \$4.00

3-yr. old, 5-6 ft. \$2.75; 3 for \$7.75

PEACH—Elberta, Balls of Georgia, Crawford Early

2-yr. old, 5-6 ft. \$1.00; 5 for \$4.50

3-yr. old, 5-6 ft. \$2.50; 3 for \$7.00

CHERRY—Black Tartarian, Bing, Lambert

2-yr. old, 5-6 ft. \$2.25; 3 for \$4.50

3-yr. old, 5-6 ft. \$3.75; 3 for \$10.50

PLUM—Abundance, Imperial Gage, Bradshaw

2-yr. old, 5-6 ft. \$2.25; 3 for \$4.50

3-yr. old, 5-6 ft. \$3.75; 3 for \$10.50

### WE PAY SHIPPING CHARGES ON ALL ORDERS OVER \$25.00

RASPBERRIES—2-yr. old Plants—EVERBEARING Red Indian Summer, LATHAM Red, NEWBURGH Red, SODUS Purple, CUMBERLAND Black.

BOYSENBERRIES—Thornless, 2-yr. old Plants.

BLACKBERRIES—Alfred, Blowers, 2-yr. old Plants.

YOUR CHOICE . . . 25c ea.; 5 for \$1.10

### GRAPE VINES (2-YR. OLD, No. 1 STRONG VINES)

CONCORD, Black. . . DELAWARE Red. . . NIAGARA White: 29c ea.; 4 for \$1.00

FREDONIA Black. . . CATAWBA Red. . . ONTARIO White: 39c ea.; 3 for \$1.10

GOLDEN MUSCAT Golden. . . . . SENeca White. . . . . CONCORD SEEDLESS

Black: 98c ea.; 3 for \$2.75

WRITE FOR OUR NEW CATALOG! It lists and describes many other varieties of Fruits, Shrubs, Roses, Berries, Perennials, Evergreens, Flower, Vegetable and Grass Seed, Fertilizers, Insecticides, etc. VISIT OUR STORE . . . OR ORDER BY MAIL! Either way, your satisfaction is assured. Place your order today!

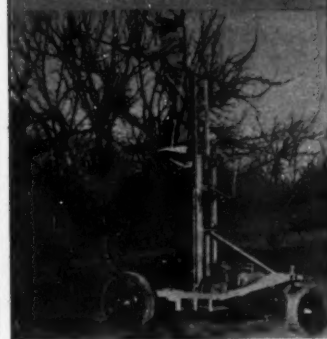
ESTABLISHED 1931—TOP QUALITY—BOTTOM PRICES



DEY STREET NURSERY

180 GREENWICH ST., N.Y.  
PHONE BARKLEY 1823

### HANDY ANDY



The Davis "Steel Squirrel" has had its face lifted. The machine is now self-propelled and a 3-4 H.P. gas engine drives the air compressor which supplies force for raising and lowering the operator's "crow's nest" and powers the pneumatic hand tools. There is a hydraulic wheel brake and foot-operated steering. As in the old model, the crow's nest is raised and lowered by a hand-operated air valve and the forward and reverse motion, too, is controlled by hand.

eral months of practice. There are several important points to bear in mind. First, don't worry about how right or how wrong you are during the first month. Make your reading every day and make an attempt at forecasting. Second, get in the habit of looking at the sky and observing the weather. Third, observe the wind direction rather closely and determine from which direction certain kinds of weather come. Before you realize it forecasting will develop into a sixth sense and you will get a real kick out of making the daily forecast.

AMERICAN FRUIT GROWER



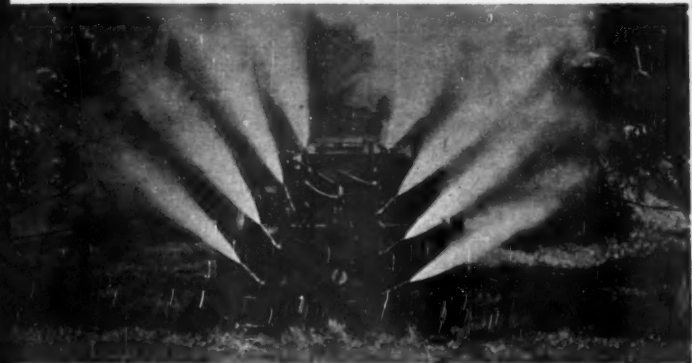
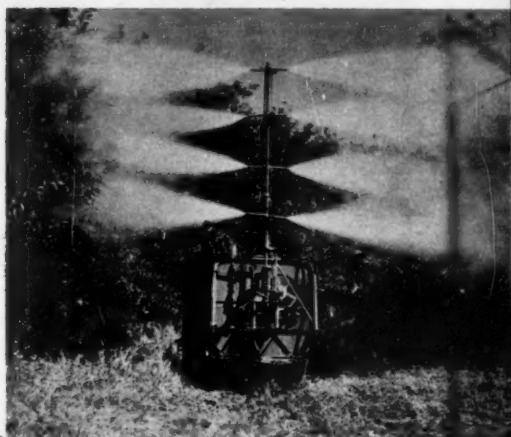
**TRIM  
OPERATING COSTS  
GET  
BETTER CONTROL  
with John BEAN  
AUTOMATIC SPRAYING**

Speed Sprayers cut operating costs and improve control on Smeltzer Orchards' 650 acres of orchards in Michigan's Traverse City area. John Bean automatic spraying has paid dividends in saving labor and materials — plus faster coverage.

### **YOU'RE PAYING FOR AUTOMATIC SPRAYING NOW! WHY NOT ENJOY THE EXTRA BENEFITS FROM IT?**

Manual spraying costs extra man-hours, extra materials, and extra worry. John Bean automatic spraying trims expensive operating costs and solves the spraying bugaboo. You're paying for automatic spraying — why not enjoy its double dividends.

Here's a typical example: Smeltzer Orchards solved their spraying problems with John Bean automatic spraying. Now, three Speed Sprayers do the job of six previous sprayers and in half the time. The job of protecting Smeltzers' 650 acres of apples, peaches, and cherries once required the labor of 18 men. Now, five men do that job. Substantial savings in materials and more thorough coverage are other extra dividends from the change to Bean automatic spraying.



Penetration and coverage — even on the undersides of branches and leaves — are features of John Bean Low Boy performance. Convert your Bean Royal to a one-man automatic sprayer with the economical Low Boy.

One economical way to convert to automatic spraying is to add either a 4- or 8-gun Automast to your Bean Royal Sprayer. Automasts have the necessary drive for complete coverage of the biggest trees because they are equipped with guns — not nozzles. You can use the full capacity of a 60-gallon pump with the Automasts and spray both ways in peaches, cherries, or young apples. Automatic spraying with John Bean Automasts is a one-man operation.

Low Boy means low spraying costs for peaches, cherries, and other low-growing fruit. The tractor driver does the spraying — puts on up to 60 gallons per minute — covers one or both sides of the row. Labor savings alone can pay for the Low Boy in one season.

**John  BEAN**

LANSING 4, MICHIGAN    SAN JOSE, CALIFORNIA  
DIVISION OF FOOD MACHINERY & CHEMICAL CORP.



#### OTHER STAUFFER PRODUCTS

##### Magnetic "95" Spraying Sulphur

A micro-fine (4 to 5 microns surface average diameter) dry wettable sulphur designed particularly for use in early cover sprays on apple, peach and cherry.

##### Magnetic "90" Dusting Sulphur

A micro-fine (4 to 5 microns surface average diameter) dusting sulphur—ideal for use during rains or as an in-between-dust in a spray program.

##### DDT

Stauffer DDT 50% Wettable and Dust Concentrates.

##### Parathion

Stauffer's own concentrate formulations made from Thiophos Parathion—the new "wonder" insecticide.

##### 341-C

Stauffer Fungicide 341-C for apple scab. Field tests indicate that red mites do not build up on apple trees sprayed with 341-C.

**Stauffer**



**CHEMICAL COMPANY**

420 Lexington Avenue, New York 17, N. Y. • 221 North LaSalle Street, Chicago 1, Illinois  
555 South Flower Street, Los Angeles 13, Cal. • 636 California Street, San Francisco 8, Cal.  
Apopka, Fla. • N. Portland, Ore. • Houston 2, Tex. • Weslaco, Tex.

## QUEEN OF FRUITS AND THREE KNAVES

(Continued from page 17)

before harvest are at present considered to be an important protection against brown rot. Just when this phase of the control program should start and the number of applications must again depend largely on humidity, number of rain periods, and past brown rot history of the orchard. Liquid lime sulfur at the rate of two and three quarts to 100 gallons of water, plus a wetting agent, has been used quite extensively by growers in Indiana, Michigan, and Kentucky. At three quarts to 100, leaf shot-hole injury may occur on low vigor trees and on some susceptible varieties. Elberta and Halehaven seem to be quite resistant to lime sulfur injury if the spray is applied as a mist from 3/64 aperture nozzles. Phygon gave somewhat better protection than three quarts of liquid lime sulfur in our Lafayette plots in 1948 but is expensive and caustic to the skin of the spray crew. Two quarts of liquid lime sulfur plus three pounds of wettable sulfur is a promising combination used on a few large orchards in 1948.

#### Sanitation

Does it pay to pick up drop fruit before, during, and immediately after harvest? We can't prove by facts and figures that it does. On the other hand, why is it that such a high percentage of our very best peach growers follow a rigid sanitary program every season? One large Indiana grower, Wilbur Yates of Vincennes, had quite severe in-transit losses in 1945 and 1946. He believes that he has greatly reduced in-transit brown rot by two very thorough preharvest sprays of three quarts of liquid lime sulfur. Spraying is done by two men with brooms operating from a low platform at the rear of the sprayer and the sprayer is pulled through the orchard east and west, then north and south, giving each tree four-side coverage in each of the two preharvest sprays. At harvest time in 1948 he assigned one man to search the trees ahead of the picking crew and to remove every specimen of brown rot. The worker found and removed only one or two pailfuls of rotting fruit per day; however, this would have been ample to contaminate picking bags and packing equipment and cause infection of his fruit in transit.

This, then, is the unfinished tale of Peach Brown Rot—partner in crime with robber curculio and Oriental fruit moth—Peach Destroyers Unlimited.

**AMERICAN FRUIT GROWER**

## RAMIE MAKES ITS DEBUT

**T**HE STORY of ramie reads like a fairy tale for there is a sad beginning and a happy ending. Ramie is the toughest member of the vegetable fibers family—several times stronger than cotton. Ramie increases in strength when wet and is mildew and rot proof. But while cotton and linen were the favorite children, ramie was the ugly duckling because of technical processing difficulties.

Decortication (separating the ramie fiber from the stalk) had always been a problem because it had to be done by hand. In the Orient, however, where coolie labor was cheap and available, ramie was used to some extent in an unprocessed state. Processing was the next stumbling block because special machinery was needed for spinning and weaving the thread. However, a small ramie industry was built up in Europe with the importation of "China Grass" for coarse-woven products such as fire hose, parachute cords, etc.

### Producing Ramie

Here in the United States men have long been interested in ramie's potentialities. Ramie is easily grown in a warm climate and, because of rapid growth, can produce three or four crops a year. Now, after many years of study and analysis, ramie is making its debut in the textile industry of the U.S.

An economical way has been found to decorticate, harvest, and process ramie, and several companies are already producing ramie thread and fabrics. The neglected step-child, which has become the wonder fiber, is being grown in Florida, California, and Texas, and several companies are now operating in these areas producing and processing the fiber.

One company, International Ramie of California, has patented the "Hi-Draft" spinning machine and has manufactured ramie thread, of No. 80 count, more economically than by ordinary cotton spinning processes.

Newport Industries, Inc. has planted 1200 acres in Florida and will add another 300 acres this year; last year they produced one million pounds of decorticated ramie. Leone Plantations, Inc., in Texas will double its present supply from 3000 acres by 1950.

In spite of these developments ramie will probably never replace cotton, mainly because of high production and processing costs and low acreage. But the ramie market nevertheless, is going to be an expanding one as more and more uses are found for this extra-strong fiber.

MARCH, 1949

# "You sure got yourself a buy!"



When a farmer buys a new Dodge "Job-Rated" truck . . . it's natural for long-time Dodge owners to congratulate him. They know, *from their own experience*, that he's bought many miles of dependable and economical farm transportation. They know he's received *real VALUE* for his money. Dodge builds the *right* farm trucks . . . "Job-Rated" to fit *your* needs to a "T."

Your truck must "stand up" under big loads during your "peak" season. It must be economical enough for quick trips to town with light loads.

Your farm truck must have inbuilt *dependability*. Its cost of operation must be continuously low . . . year after year. Service and parts must be readily available.

Your Dodge dealer can recommend a *better* farm truck for you. *Your* Dodge truck will have the right "Job-Rated" engine . . . for ample power and top economy. It will have the right wheelbase, clutch, transmission, gear ratio, frame, springs and tires . . . to fit *your* farm hauling requirements. See your Dodge dealer. When he tells you the whole "Job-Rated" story, you'll know he's talking sense. And remember . . . *only* Dodge builds "Job-Rated" trucks.

To lower your farm hauling costs...



## switch to DODGE "Job-Rated" TRUCKS



← America's Favorite!

At "sugaring time" or any time when temperatures are low, dependable spark plugs are essential to the efficient performance of cars, buses, trucks, tractors, and stationary engines which are such a vital part of rural or urban life. Dependable spark plugs make dependable engines, so dependable CHAMPIONS are naturally America's favorite. In fact, Champions are the favorite spark plugs of most users throughout the world, proof positive that they represent the ultimate in quality, value, performance and dependability.

Champion Spark Plug Company, Toledo 1, Ohio.



**FOLLOW THE EXPERTS**

DEMAND DEPENDABLE CHAMPIONS FOR EVERY FARM ENGINE

Listen to the CHAMPION ROLL CALL . . . Harry Wismer's fast sportscast every Friday night, over the ABC network

## RASPBERRIES ARE PROFITABLE FOR US

**R**ED RASPBERRIES for us have proved to be an easy-to-grow and very profitable crop. We follow the hill system of culture as this seems more practical in our section of Atlantic County, New Jersey, than the wide or narrow matted row method.

With the hill system a great deal of the field work can be done with a tractor and the problem of sucker plants or weeds which compete for moisture and plant food becomes a minor one. Two or three times before harvest begins we hook two 35-inch knifebladed cultivators to the tractor and clip off suckers missed by the first working. Since most of the growth of one plant is concentrated within 18 square inches, only this area needs to be hand hoed.

We try to keep ahead of disease by choosing new, clean soils and by planting new strains which have not yet developed streak or mosaic. In our section diseased planting stock has caused much discouragement among raspberry growers and many fields have been given up. If a plant becomes diseased, we dispose of it, root and top, to avoid infecting healthy plants. And with the hill system it is easy to dig out such plants. Roguing out mosaic is most easily done when the first raspberry leaves are fully developed. Yellow tinged, crinkled foliage is a symptom of the disease.

Because they are host plants of many diseases, black raspberries should not be planted near the reds, and all wild clumps should be destroyed.

### Plow Under Cover Crops

Next to healthy stock, we consider well-drained humus-filled soil the most important requirement for successful raspberry growing. A sandy or gravelly foundation is best, since raspberry roots will not tolerate a wet subsoil.

Two years before planting a field to raspberries we plow down a heavy growth of cow peas and the following year we turn under a rye crop, to insure a plentiful supply of vegetative matter in the soil. Our plants are set in May from suckers from our own plants. If weather conditions are dry we turn on our irrigation system (all our berry fields are equipped) and if the ground is extremely dry, we irrigate until 10:00 P.M.

It is extremely important, in hill culture, to select not more than six to eight new canes each year for renewal purposes. We make this selection while handhoeing and while the suckers are being shaved off with the

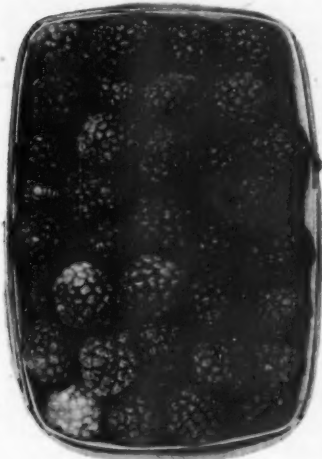
**AMERICAN FRUIT GROWER**

knifebladed cultivator in the middle of the rows.

When cultivating with disk or springtooth, we stir the soil only to the depth loosened by the knives. By using the larger implements, the ground is kept level at all times. We do not cultivate during picking time because of the possibility of dust getting on the berries.

All our berries are picked in oblong pints, which are in turn packed in 12-pint slats. The crated berries are set where air can circulate through them until the trucks are loaded at 6:00 P.M. for the New York market, which we serve. The berries are in the market by 11:00 P.M. and ready for sale shortly after 1:00 A.M.

We begin at once, after the picking season, to cut out the old bearing canes. Boys gather this old wood, take it out to the end of the field and stack it in one or two piles. It is burned the



An oblong pint box of Latham raspberries.

same day so that any insects harbored in these old canes will not have an opportunity to infest new growth.

Immediately after the first of the year we spread chicken manure around each hill. We also use a standard 5-10-10 fertilizer. This same practice is followed with our Boysenberries. Just as soon as we finish picking our reds, our early Boysenberries are ready to be harvested. These are packed in square pints and shipped in 12-pint slats.

We have tried several varieties of red raspberries but are concentrating on the Latham variety, for it is making real money for us. A profit can be expected the first year following the setting of the plants, as this variety is easily taken care of and the plants are highly productive.—James Shoemaker.

MARCH, 1949

## MICRO-FLOTOX®

### WETTABLE SULFUR

This ORTHO sulfur fungicide is ultra-fine in particle, non-caustic in reaction.

The addition of LIQUID ORTHOX causes the sulfur particles to spread and adhere in a fine film that shields fruit and foliage against scab spore contact.

THIS NEW  
**ORTHO**  
GREENHOUSE & FIELD READY

COMBINATION SPRAY

GIVES  
**APPLE SCAB CONTROL**

*extra*  
**MEANING**

**TAG®**

FUNGICIDE NO. 331

This organic fungicide, originated by ORTHO, combined with MICRO-FLOTOX converts sulfur sprays into ACTIVATED protection against and after-infection control of apple scab.

FOR SCAB-FREE APPLE CROPS THIS YEAR - -  
Consult your ORTHO Fieldman in your area or, at least write for this folder - - an introduction to TAG Fungicide No. 331.

FLOTOX, ORTHOX, ORTHO, TAG, reg. U.S. pat. off.

## CALIFORNIA SPRAY-CHEMICAL CORPORATION

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for Quality

**Q**uaker State Motor Oil is refined from 100% pure Pennsylvania grade crude oil. It is the finest motor oil, we believe, that is produced anywhere in the world.

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

Member Pennsylvania Grade Crude Oil Association

## PROPAGATE GRAPES

(Continued from page 13)

bium layers or the rows of cells located between the bark and the wood which are capable of forming new cells meet in the scion and the stock, and that the cambium of scion and stock heal rapidly and completely. Two types of grafting are of interest to the grape grower—vineyard grafting, which consists of top-working established vines, and bench grafting, where a scion is grafted indoors either to an already rooted cutting or one still to be rooted in the nursery row.

Top-working is seldom practiced but can be used to change an undesirable variety to another variety. The main reason for top-working is to make use of a root system already established in the vineyard. To carry out the work one removes the soil near the base and cuts the vine horizontally near the soil surface. The cleft through the center of the stock in which the scion is to be placed can be made by splitting the stock with a chisel or, better, with a thin-bladed saw to a depth of one and one-half to two inches.

A scion having two buds is cut wedge shaped at the lower bud and is inserted into the cleft so that the cambium of the stock and scion are in good contact. If the stock is large (over three years old) the graft is held securely without tying, whereas younger vines may require tying to hold the scion securely in place.

### Mound Soil

To protect the scion and to insure rapid healing of the union, soil is mounded around the grafted plant so that only the tip of the scion is exposed. Sprouts arising during the growing season from the stock or roots coming from the scion must be removed.

Successful grafting depends on the skill of the operator, the material at hand, and the time when done. Success is more likely either before active sap flow starts in early spring or shortly after activity has passed. Even with the best of care a number of grafts may fail to grow.

The preferred way to obtain grafted grapevines is by bench grafting either by the whip-and-tongue or by the bud-grafting method. Both stock and scion must be of like diameter. Bench grafting is done in March. The material for stocks and scions, of course, has to be collected in early winter.

Cuttings for stocks are made of fairly uniform length, approximately 10 to 12 inches, with the basal cut just below a bud. The top cut is made about two inches above a bud. All

**AMERICAN FRUIT GROWER**

visible buds on the stock are removed with a sharp knife, thus preventing new shoot growth from the rootstock. The scion is cut with one bud, with two and one-half inches of internode below the bud and two inches above. Scions with two buds may also be used and some propagators may even prefer them.

The actual fitting of scion and stock is accomplished in the following way. With a sharp grafting knife, two identical beveled cuts about one-half inch in length are made on the stock and on the scion. At a point one-third from the top of the bevel of the stock a slot is cut down the cane to a distance of one-half the remaining length of the bevel. A similar cut is made on



It takes fewer men and less effort to move fruit from orchard to warehouse via the "Crabb Lift Link," according to Frank Kroger of Tieton, Wash. Originated and produced by Kroger and Jay Crabb of Yakima, the hydraulically operated lift is mounted on an orchard tractor and carries a pallet of 24 boxes to a trailer which holds a load of seven pallets or 168 boxes. The trailer, in turn, is pulled to the warehouse by a Jeep. Kroger likes this system because it eliminates manual handling of the fruit from the time it is placed in the box until it is unloaded at the warehouse. The pickers like it because it provides a flat surface on which to stack the boxes as they are picked. The lift has been in use for three years, and Kroger says the operation will be further facilitated when warehouses have been equipped to unload the pallets by fork lift.

the beveled face of the scion. Stock and scion are then joined and tied in place with a rubber strip.

This is the conventional whip-and-tongue graft. Grafts thus made may be held for several weeks if they are not subjected to either high or low temperatures. The usual way to store them is in boxes 30 inches long, 14 inches wide, and 17 inches high, covering the grafts completely with moist sawdust, peat moss, or shredded sphagnum moss. The purpose of such

(Continued on page 42)

MARCH, 1949

**You Can Now Drive  
the BIG BARGAIN  
... in Orchard Tractors**



● In the popular-priced Model "VAO" . . . smallest of the three Case grove and orchard tractors . . . you get a heavy-duty engine, just as in the larger sizes. This Case-built, long-stroke engine works at moderate piston speed, pulls full load when throttled down for turns, saves a lot of gear shifting. Like all Case tractors, the "VAO" has many characteristics of the famous Case Model "L," for 20 years the standard by which all tractors were judged for economy and ENDURANCE.

Owners with a lot of tractor experience often say the "VAO" gets more work done than anything else in its size and price class. Its capacity comes from splendid balance for sure-footed traction and steering, and from the right range of gear speeds to make the most of eager engine power. Its endurance comes from the exceptional care to keep out destructive dust and dirt, and from the Case way of making every part a bit better than might seem necessary. See your Case dealer now about getting a Model "VAO."

Look to this sign for the latest in orchard harrows. Ask your Case dealer about the new "CO" offset disk harrow—a heavy-duty type with power-saving ball bearings sealed and lubricated for life of the heat-treated blades. The Case-Evans offset harrow has fixed-angle gangs, with rubber-tired gauge wheels for depth control and highway transport. Write for folders on these or other harrows, plows, grain drills, mowers, rakes. Mention any size tractor, any farm machine you need. J. I. Case Co., Dept. C-13, Racine, Wis.



**BIGGER CROPS—AND  
CLEANER FRUIT—  
MORE CASH FOR YOU**



**SHERWIN-  
WILLIAMS**

**DIMITE**

**GETS THE MITE  
—AND THE  
RED SPIDER  
TOO**

**PEST CONTROL GUIDE  
JUST OFF THE PRESS**

• Just off the presses—110 page illustrated pocket-size handbook that describes and prescribes for most every plant pest and disease. Send 20¢ in dimes to The Sherwin-Williams Company, Agricultural Chemicals Division, 1287-I Midland Building, Cleveland, Ohio. (Export Div., Newark, N. J.)

**SHERWIN-WILLIAMS**  
**AGRICULTURAL CHEMICALS**  
Protecting the Food Crops of America

IN CANADA  
ASK FOR GREEN CROSS  
INSECTICIDES  
AND FUNGICIDES



**PROPAGATE GRAPES**

(Continued from page 41)

storage is to provide favorable conditions for callusing of the grafts before planting in the field. It is desirable to have a temperature near 70° F. in the callusing box. This can best be accomplished by placing the boxes in a greenhouse, although any room which can be held at a uniform temperature will do.

Grafts are planted in the nursery row in a similar way that hardwood cuttings are planted. Greater care must be taken to prevent drying through exposure to sunlight and drying winds. With the union between the stock and the scion just above soil level of the filled planting trench, a ridge is turned up so that the union as well as most of the scion is covered. To prevent the scion from rooting, the ridge is removed during mid-summer.

In contrast to grafting a complete scion to a stock, a single bud may be used. This bud grafting method is faster and it is claimed that a higher percentage of successful grafts can be obtained. The work is done either by hand or by machine. If done by hand, a cut is made deep into a bud stick about one-quarter inch below the bud and sloping downward at an angle of about 45 degrees. The second cut is started about three-quarters inch above the bud, the knife moving in a straight plane behind the bud to the first cut, thus removing a wedge-shaped piece containing the bud. A bud is removed from the stock by the identical procedure and the scion bud is inserted in its place and held in place by a rubber budding strip.

**Grafting Machines**

A word of caution: Grafting machines, developed mainly in France, are by no means perfect and an inexperienced operator may not work faster with them than a good propagator with his knife. The machine alone will not give successful grafts; only through a combination of good plant material, proper care, and reasonable accuracy in grafting may fairly successful results be obtained.

What are some of the rootstocks recommended for grape varieties? Under New York conditions, considering the Concord variety, Riparia Gloire has been a very good stock on gravelly soils, whereas Clinton has thus far been best for heavy soil. Reports from Missouri indicate that Constanica (*Riparia Rupestris*), a hybrid of native wild grapes introduced by the USDA, has under Missouri conditions been the best stock for Concord, whereas USDA No. 125-1 (*Cordifolia Riparia*) has been best for the varieties Campbell and Moore.

**AMERICAN FRUIT GROWER**

## IN THE NEWS

### R. G. HATTON



R. G. Hatton

From the East Malling Research Station in Kent, England, comes news of the retirement, for reasons of health, of Dr. R. G. Hatton, director. He has been connected with the Station since its inception more than 35 years ago, was acting director from 1914-18, and has been director for the past 20 years. It was under his leadership that the Station developed to its present position as one of the leading fruit research stations in the world.

### RICHARD W. THATCHER

One of several new appointments by the DuPont Company is that of Richard W. Thatcher as sales manager of agricultural chemicals in the Grasselli Chemicals Department. Formerly sales manager of the industrial product and development and service section, Mr. Thatcher has been with the company since 1929 and with the pioneer and new industrial chemicals section since 1937.



R. W. Thatcher

### A. DEWEY BOND

A. Dewey Bond has recently been appointed assistant director of the fruit and vegetable department of the American Farm Bureau Federation by Porter Taylor, director. With a major in agriculture and a minor in pomology, Mr. Bond received his M. S. degree from Cornell University in August, 1948. His undergraduate work was taken at Ohio State University.

undergraduate work was taken at Ohio State University

### FRANK D. JOHANSON

Frank D. Johanson is the new assistant extension fruit specialist at the Connecticut Agricultural Experiment Station replacing A. T. Williams who resigned last spring. Johanson comes from the New Jersey Experiment Station where he was foreman and research associate of the 80-acre orchards at Rutgers University. In his ten years of work at the New Jersey station he directed spray schedules and was active in the research and breeding programs under the late Professor M. A. Blake.



F. D. Johanson

### HOWARD J. GRADY

The Board of Directors of the California Spray-Chemical Corp. has appointed Howard J. Grady as vice-president. Mr. Grady has been with the company for 22 years and has been active in sales, research and plant operation. Instrumental in introducing modern oil sprays for pest control and other new methods to European agriculture, he also helped to establish the "Ortho" line of garden and home products in the United States.

H. J. Grady

# Multiple Utility

Keep up-to-date with this new Hardie Catalog.



## Hardie Offers

the grower air blast and conventional sprayers that will squarely meet any of the several modern requirements in the application of

both concentrates and conventional liquid sprays. When you buy a Hardie you have everything. Hardie research continues to develop new-type units that anticipate future needs as well as serve the present.



ORCHARD BOOM



DOUBLE BOOM



ORCHARD GUN



ROW CROP BOOM



FIRE FIGHTING



WATER PAINTING



CATTLE SPRAYING



WEED SPRAYING

A sprayer means a lot of things on the farm today—not only fruit trees, potato and vegetable spraying but weed control, animal pest control, DDT spraying, white washing, fire control and use of high pressure stream for flushing out pens and poultry houses.

Hardie gives you all kinds of sprayers in one unit. Hardie inexpensive application devices and accessories enable you to make an orchard "boom" sprayer, a high or low pressure weed sprayer, a cattle sprayer, a fire extinguisher—any specialized outfit you want out of the same Hardie. A wide variety of models and sizes, from 4 to 80 G.P.M., enable you to select exactly the capacity and style you want.

## The Hardie Mfg. Company

HUDSON, MICH.

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*Only with its "cap" on*



*and it hikes home at 15 1/2 M.P.H.*

To the top of its radiator cap, the streamlined International Harvester O-4 orchard, grove and vineyard tractor "stands" only 4'6" tall. It has no projections or crevices to strip leaves or fruit. Smooth, complete shielding and low overall height means you can work close under low-hanging limbs and do a clean cultivating job next to the trees.

But the Model O-4 is no "shorty" when it comes to doing work. It has full 2-plow power for spring-toothing, disking or spraying. Its 5 speeds give you a gait for every job—including a fast fifth of 15 1/2 m.p.h. to highball the sprayer to the water tank, or hurry home to dinner.

International Harvester builds 5 models of wheel-type grove and orchard tractors. And there's a full line of IH tillage tools to satisfy all of your orchard needs and conditions.

Talk power and equipment soon with your International Harvester dealer.

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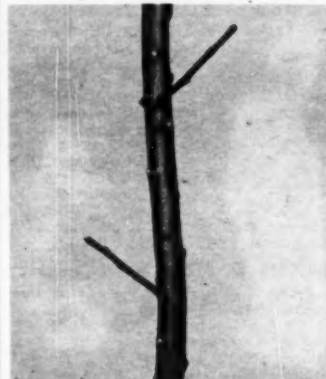
## HOW TO BUD AND GRAFT

(Continued from page 14)

With the modern trend to restrict any new apple plantings to a small number of commercially desirable varieties, it is not surprising that pollination problems are existent in certain major apple growing areas. It is a well established fact that all varieties benefit by cross pollination and that it is necessary not only to grow varieties that bloom at the same time but also varieties that are inter-fertile. To overcome these pollination difficulties in established orchards, the only sound long range program is to graft over to suitable pollinizers a sufficient number of trees to provide for adequate cross pollination.

### Frame-Working-

Since we are living in an age of high speeds, a rapid method of changing over the bearing area of a tree from one variety to another is required. This can best be accomplished by a grafting technique known as frame-working, which received its first large scale practical application in Tasmania in 1928.



A frame-work limb showing spacing and angle of inserted scions. Scions are usually spaced 8 to 10 inches apart.

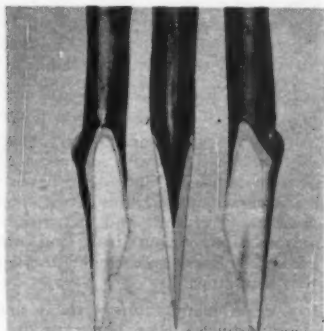
The object of frame-working is to retain as much as possible of the main and secondary limbs of the tree to be worked over, the method differing in this respect from top-working in which the object is to replace as much as possible of the limb structure. Due to the retention of the frame-work limbs, the balance between root system and top structure is disturbed very little. Furthermore, the pruning wounds made in frame-working are small in size and therefore heal over more quickly than the much larger wounds which result from the removal of the large frame-work limbs in top-working.

A further important advantage is that frame-worked trees return to bearing much sooner after grafting

**AMERICAN FRUIT GROWER**

and reach full production in a shorter space of time than top-grafted trees. Thus the greater expense in frame-working as compared with the top-grafting is repaid in quicker and larger crop returns.

Largely through changing marketing conditions there is a trend towards the production of new and better varieties. It has become evi-



Three views of oblique side graft scion showing manner of shaping insert end.

dent, with increasing consumer demand for high quality fruit, that in the older established fruit regions many of the outdated varieties should be replaced. These outdated trees may be changed over quickly by the frame-working method. Mature apple and pear trees in good health have produced paying crops the third year after frame-working.

In 1942, a large scale trial involving frame-working and top-grafting was carried out at the Dominion Experimental Station, Kentville, N.S. Thirty-year-old Stark trees in good condition were worked over to Crimson Gravenstein. The frame-worked trees required, on the average, 10½ man hours for the operation whereas the top-worked trees took only 1½ man hours to top-graft. Each frame-worked tree bore just under a bushel the year following grafting and 12 bushels in 1944, while the top-grafted trees did not even bloom during this period.

#### Hardier and Stronger Trees

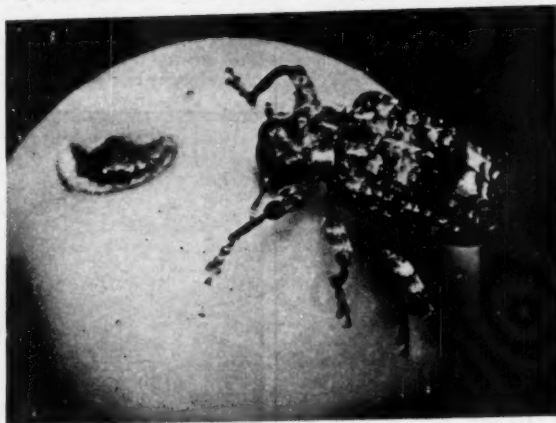
In the colder fruit growing regions some of the widely grown varieties are subject to trunk and crotch injury. It has been found that the performance of these varieties can be greatly improved by top-working them on the frame-work limbs of a hardy, mechanically strong variety. For example, the variety McIntosh suffers in test winters from trunk splitting and crotch injury to a degree that the tree may be killed outright.

By planting Hibernial, a hardy va-

(Continued on page 46)

MARCH, 1949

## WANTED: FOR GRAND LARCENY



Evidence in the hands of fruit growers everywhere will prove conclusively that the Plum Curculio steals millions of dollars annually.

**BETTER CONTROL** of Curculio is now available. Greatly reduced loss by "drops"—a minimum of wormy fruit can be obtained. Ask for:

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**BHC AND NIATOX DUSTS AND SPRAYS  
KOLO MATERIALS  
SPECIAL PEACH MIXTURES**

*for control of all pests on peaches and other stone fruits.*



Niagara insect and disease control programs and formulations are "custom-made" for specific growing areas. Niagara formulates the right materials for your area and the Niagara field man is on the job to direct their proper usage for better protection and cleaner fruit.

SEE YOUR *Niagara*  
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## Corona Products



### ARSENATE OF LEAD

### MICRONIZED SULFURS (Wettable and Dusting)

### 50-50-W (Micronized wettable powder containing 50% DDT)

### 3% DDT DUST

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Corona Chemical Division

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PAINT • GLASS • CHEMICALS • PLASTICS • BRUSHES  
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## HOW TO BUD AND GRAFT

(Continued from page 45)

riety with strong crotches, and then budding or grafting McIntosh onto the Hibernial frame-work, these troubles are largely overcome. One-year-old whips are preferred and they should be trained in the modified central leader method to five or six scaffold limbs spaced six to eight inches apart and arranged spirally around the trunk. As soon as these main scaffold limbs are of suitable size they are top-worked with the fruiting variety by budding and grafting.

### HANDY ANDY



An ingenious orchard platform, cable controlled and easily adjustable from 7 feet to 18 feet wide, provides a stable base for pruning and thinning at the Harvey Hartline orchards, Carbondale, Ill.

When closed for movement down tree rows, the platform is 7 feet wide and opens from the center to a maximum of 18 feet when the wings are extended. It is 16 feet long and is constructed with four legs which are put in place and the tractor backed away from underneath when needed for other work.

"Cost of the platform should be around \$600," says grower Hartline, "although the first model cost considerably more." Growers interested in detailed information about the "Hartline Set-top" may write Harvey Hartline, Carbondale, Ill.

The buds or grafts are inserted into the scaffold limbs approximately 12 inches from the trunk. Shield or T-budding is the method in general use and the buds should be inserted into the underside of the limbs to insure a more spreading tree habit. When the buds fail to grow the limb can be reworked the following spring using the side-graft method. In order to maintain normal tree performance only two or three scaffold limbs should be worked over each year. Since it has been proven that pruning has a dwarfing effect, excessive removal of any shoot growth should be avoided.

## ICE CREAM MERCHANDISING MEANS BIG FRUIT AND NUT PURCHASING

**M**ERCHANDISING is the "big stick" in today's way of doing business, and merchandising with fruits and nuts is an important part of the vigorous drive by ice cream manufacturers for ever-increasing gallonage.

Ice cream production last year exceeded six hundred million gallons

Yet ice cream manufacturers are not satisfied. For with an increased consumption will come an even greater consumer appreciation of the food value of ice cream. And, as a result, season after season fruit and nut growers will see an expanding market for their crops.

Ice cream manufacturers today are planning bigger sales, bigger production and bigger purchasing.

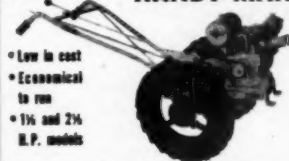
You, who are fruit and nut growers, can expect to realize your proportionate share of the growth in sales by this industry—this year and every year—for you furnish an important part of ice cream that consumers want . . . which means a continuing, growing market for fruits and nuts.

Yours for a greater market for fruits and nuts in the ice cream industry, International Association of Ice Cream Manufacturers, Barr Building, Washington, D. C. (Adv.)

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YOUR  
YEAR 'ROUND  
HANDY MAN!



- Low in cost
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Bready speeds gardening—does dozens of other jobs on large farms and small. Powerful, easy to guide. Complete line of gardening implements plus cutter bar, lawn mower, snow plow, cart, air-compressor, other handy work-saving attachments.

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AMERICAN FRUIT GROWER



## POLLEN

Lack of Cross Pollination  
Results in Small Sizes,  
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Crossing will increase size and  
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and Self-Sterile Varieties

1948 Pollen Experiments Show  
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WENATCHEE, WASHINGTON  
Tel. 16 or 1997-J



MARCH, 1949

## NATIONWIDE FRUITS

(Continued from page 20)

scars made by the plum curculio, evidence of the red-banded leaf roller is recognized by irregular longitudinal feeding scars. Injury is most likely to occur where the foliage is in close contact with the fruit, since the larvae construct silken shelters between the two surfaces and feed within the protective webbing.

In some instances leaf roller larvae have been found to enter and feed within peaches having a split pit. However, the greenish-yellow larvae may be readily distinguished from the pinkish Oriental fruit moth larvae although the two species are quite similar in size and general appearance.

While not a serious pest of stone fruits at present, the use of the newer organic insecticides may contribute to increased damage in future seasons. Peach and plum growers should be on the lookout for the appearance of this insect next season.

## PRUNES

• Annual application of nitrogen to shallow non-irrigated prune orchards has been found, after nine years of field tests at the University of California under the direction of Pomologist Dr. Edward L. Proebsting, to improve tree condition and increase yields. It had been believed previously that nitrogen would increase leaf surface and use up all available moisture leaving less for the growth of the fruit.

## APPLES

• Research on insect control during the year ended June 30, 1948, is the subject of the annual report of Dr. P. N. Annand, chief of the Bureau of Entomology and Plant Quarantine.

Of interest to fruit growers is the information on DDT and Parathion. The widespread use of DDT for codling moth control, according to the report, has resulted in reduction in apple production costs. In the Pacific Northwest, three DDT sprays are now the rule as compared with six or more sprays of lead arsenate.

Parathion has given outstanding results in tests against many pests, including orchard mites, the red-banded leaf roller, pear psylla, and certain scale insects.

The new insecticides, Toxaphene and Chlordane, were found to give quicker grasshopper control and con-

(Continued on page 48)

## ERADICATE APPLE SCAB

## Puratized\* AGRICULTURAL SPRAY

Pat. No. 2,423,262

Research workers and commercial growers acclaim this patented formulation as an outstanding contribution for the control of scab and other plant diseases.

PURATIZED AGRICULTURAL SPRAY doubly safeguards your trees. It offers fast, effective protection before infection occurs and acts to eradicate infections after they start.

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- A low cost spray program — one gallon makes 800 gallons of spray.
- Instantly water soluble
- Leaves no visible deposit
- Can be applied with common insecticides and fungicides
- Effective too, for brown rot blossom blight of cherries and peaches

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## NATIONWIDE FRUITS

(Continued from page 47)

tinued to kill the hoppers over a longer period of time, under some conditions, than poisons used in recent years. Grasshoppers increased in numbers in many areas in 1948, according to the report; in fact, surveys have indicated steadily increasing numbers of the pest for the last three years.

The pear psylla control project which was carried on in the Northwest since 1940 was discontinued at the end of 1947, as insecticides for control of this pest are now available in ample quantity.

The citrus blackfly, discovered at Empalmo, Mexico, in June, 1947, is now considered to be a serious threat to the citrus industry in the United States. Research is being conducted in co-operation with the Mexican government and citrus growers of that country to obtain more effective control of the pest by the use of insecticides. A search is also being made for natural enemies of the blackfly.

● Plant Patent 819 has been granted to Curtis C. Aller of Yakima County, Washington, for a new variety of apple of the Newtown type. The variety originated as a sport of a Yellow Newtown and apparently is identical with its parent in foliage, tree type, growth, and fruit flesh.

It differs from its parent in that it has fruit spurs which separate easily from the fruit in picking, its fruit is elongated and blocky, having bright green color, deep cavity and long stem, it is free from susceptibility to scald and bitter pit, and the tree is an annual bearer.

● Where sawdust is used as a mulch in orchards a generous supply of nitrogen must be applied for at least the first three years, according to Dr. C. E. Baker of Purdue (Ind.) Experiment Station.

This need for nitrogen is a biological one. When sawdust or any other carbonaceous material is applied to the soil either as a mulch or by plowing it under, the biological balance in the soil is disturbed.

The bacteria that consume the cellulose multiply very rapidly and these organisms use the soil nitrates as food. The micro-organisms that break down the raw organic matter in the soil into nitrogen compounds that the tree can use are unable to manufacture enough nitrate nitrogen for both the tree and the bacteria. Thus a temporary nitrogen shortage occurs.

The old biological balance is eventually re-established but the fruit

**AMERICAN FRUIT GROWER**

grower meanwhile must use nitrogen liberally.

As an example of the rate of increase in the amount of fertilizer that must be applied, where five pounds of ammonium sulfate per tree was sufficient for trees in bluegrass sod, trees mulched with sawdust required seven and one-half pounds per tree.

Successful use of sawdust as a mulch has been made by Coffing Brothers in their Indiana apple orchards. About 15 years ago they applied mixed hardwood sawdust fresh from the mill around large mature apple trees growing in sod. An area approximately 25 feet square under each tree was mulched with at least 12 inches of the fresh sawdust and given liberal annual applications of nitrogen. The trees are still vigorous and productive.

In addition to using a sawdust mulch on bearing apple trees, they applied a similar mulch about newly set replants in their orchard. Many of these trees were grown for 10 years or more in this manner; however, a good application of a nitrogen fertilizer was given them each spring.

Mixtures of sawdust and manure or wood shavings and manure make a very desirable mulch, states Dr. Baker. Such a mixture makes a better mulch than manure alone, as it is better balanced chemically. Because it decays more slowly, it requires less frequent renewal than manure alone. The use of chemical nitrogen seldom is necessary with mulches composed of about 50 per cent manure because such a mixture does not upset the activities of the soil organisms.

● Boron, zinc, and other minor elements are found in the top three inches of orchard soils, according to Dr. A. H. Thompson of the USDA. For this reason any cultural practice which destroys the growth of feeder roots in this area should be avoided. In apples, internal corking and pitting of the surface of the fruit are an indication of boron deficiency.

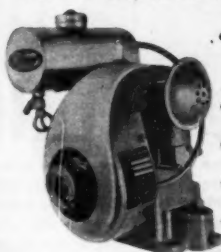
#### CITRUS

● It is expected that 14 per cent of the Florida citrus crop this year, or 9 million boxes, will be marketed in frozen concentrate juice form. These totals, it is hoped, will be upped to 20 per cent or 14 million boxes in 1950, and in 1951 to 54 per cent or 35 million boxes. These percentages are based on the 1948-49 production figures.

While the concentrate market may overlap the fresh fruit market to some extent, new outlets at present take the bulk of the frozen concentrate, it is reported.

MARCH, 1949

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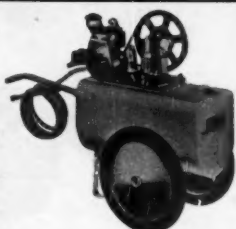
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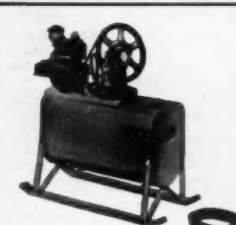
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NO. 4244 SKID-TYPE SPRAYER

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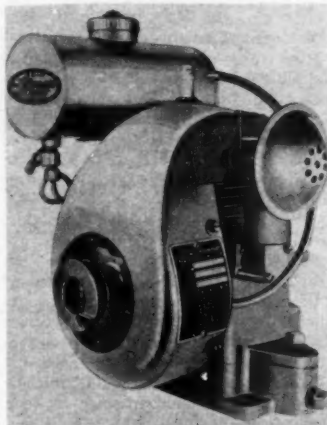
Package live bees with queens 3 pounds \$5.00. For larger swarms, each additional pound add \$1.25. Set them in the orchard, pull release. Four frame comb nuclei with queen, shipped two in standard hive \$7.00 each. All from our Georgia and Florida apiaries.

**Write or phone ALAN EBY**

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**NEW** For YOU

**Lighter, Stronger,  
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The Lauson Company, known for over 50 years by growers everywhere, has designed a lightweight, heavy-duty gasoline engine which will take the guesswork out of orchard and grove jobs. The new Lauson engine embodies the same dependability which has made Lauson a well-known name in the fruit industry. Write the Lauson Co., New Holstein, Wis., for details on the new lightweight, heavy-duty 23-pound motor.

**Four Wheels Are  
Better Than Two**



Fruit growers must have positive traction. Missing a spray when the ground is wet and the scab spores are flying may mean a lost crop. The new Four-Wheel Drive Detroit Tractor offers any grower plenty of power and traction for the heaviest spray rig or the most demanding orchard job. Write the Detroit Tractor Corp., Detroit, Mich., for complete details.

**AMERICAN FRUIT GROWER**

- LOW-COST SPRAYING
- NEW TRACTOR CAB
- HARDIE SPRAYER

### Cuts Spraying Costs



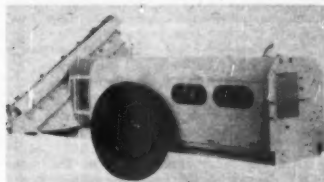
Realizing that the cost of producing fruit must be cut, many growers are finding that the new Gorman-Rupp Spray Tender quickly pays for itself in reduced-spray labor costs and makes possible perfect blending and agitation of spray tank chemicals. Write the Gorman-Rupp Co., Mansfield, Ohio, for descriptive folder.

### Winterize Your Tractor



Pruning and dormant spraying are disagreeable orchard jobs. Take much of the winter and physical discomfort out of these two necessary evils by installing a tractor cab. Growers who are using them say that the cab provides tractor operator protection during the entire spraying season. Quickly installed, the Tokheim cab is inexpensive. Tokheim Oil Tank and Pump Co., 1128 Wabash Ave., Fort Wayne, Ind.

### Concentrate Spraying



Uses seven-eighths of the water, five-sixths of the labor, one-half the tractor power, one-fourth of the spray materials, and one-half the time.

The new Hardie concentrate sprayer is the result of over five years' experimentation in New York orchards. This is a piece of equipment every grower should inquire about. Write Hardie Mfg. Co., Hudson, Mich.

MARCH, 1949



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**NO LIME IS REQUIRED  
CAN BE USED AS DUST OR SPRAY**

NU-Z is insoluble in water and will remain in suspension.

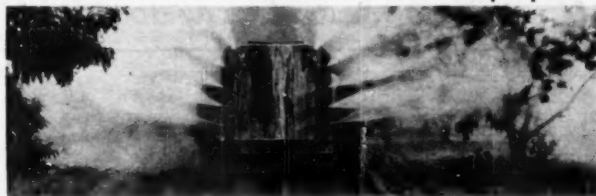
NU-Z is highly soluble in weak acid created by plants or fruit trees.

NU-Z, as a neutral spray, can go directly to spray tanks WITHOUT LIME.

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Send for information today on this new and thoroughly tested HALE Sprayer with Centrifugal Pump. Capacities up to 80 GPM at 600 lbs. pressure with ample reserve capacity.

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FINEST

- Designed specifically for professional use
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Length overall 42"

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including 600 colonies bees, trucks, house, shop and other buildings located on 80 acre farm near Ithaca, New York. Everything modern and in excellent condition. Bees and locations may be purchased separately if desired.

WILLIAM L. COGGSHALL.  
South Lansing, New York

**STATE NEWS**

(Continued from page 22)

Speaking of the colored Delicious, most important variety in their extensive plantings, Byrd said that owing to frost they haven't had a full crop since 1944. Last spring 25,000 western-type smudge pots were purchased and 350,000 gallons of oil used in fighting frost but only partial success was attained, due primarily to inexperience. "We believe the principle is sound and this spring will heat again if necessary," said Byrd.

Byrd has used pneumatic pruners and says six men with power pruners will take the place of eight with hand pruners. Enthusiastic about the brush shredder, Byrd declared 15 to 20 acres of brush are cleared in a day, thus helping to eliminate fire hazards and reducing labor costs.

The panel discussion by five growers on the elements of success in orcharding proved stimulating. Emphasizing the importance of site, H. W. Lutz, Carroll, advocated selecting an orchard site first and locating the home later.

Ben Davis, Clyde, offered the human factor as most important in orcharding. "Many an orchard has been so closely identified with a single individual that it has risen to its prime as he reached his prime, declined as he declined. Much of our present decline in Ohio apple tree population is traceable directly to the absence of sons to take over an orchard or to lack of training of available sons in an appreciation of fruit growing."

H. N. Scarff, New Carlisle, emphasized the ability to handle and execute orchard plans efficiently. "A good site in the hands of a real orchardist is pretty certain to pay off," declared Jerome Hull, Canfield. C. K. Bey, Clarington, believes the soil is the most essential element in successful orcharding.

Officers elected for the ensuing year were: Howard N. Wells, Wilkesville, president; Tom L. White, Chardon, first vice-president; Estel Dempsey, Oak Hill, second vice-president; C. W. Ellenwood, Wooster, secretary; I. P. Lewis, New Waterford, treasurer. Retiring president, E. C. Cotton, Elyria, was appointed to the executive committee.

**NEW YORK**—A good apple blossoming season is in prospect and, provided weather conditions are favorable, growers are anticipating the largest crop since 1945, according to Ralph Palmer, fruit agent at Rochester.

The question in the minds of western New York growers when the harvest season approaches may be whether to cater to the fresh fruit market or sell to processors. There has been a tremendous shift in this area during the past 25 years from the fresh to the processed market, with nearly all apples going into sauce and other by-products the last few years.

The processing price situation in 1948, however, was not entirely satisfactory, a top price of \$2.50 per cwt. being received, so some growers started to shift to the fresh market. Since apple processors require a constant supply of quality fruit, there is the possibility that good prices will be paid this year irrespective of the size of the crop. Furthermore, proposed control of processing facilities in the Appalachian area totaling 2½ million bushels may have some influence on the price situation.

Growers are becoming more and more cost conscious and are being attracted to the methods of operation which will lower production costs. Along this line is the use of labor-saving devices and tank mix materials. Manufacturers are going to have to prove their materials are worth the prices charged for them.

The planting trend in this area is toward



From where I sit ... *by Joe Marsh*

**The Missus "Ducks" Out**

Slim Hartman took his missus duck hunting last Fall. And after five hours of sitting in a swamp, she'd had enough! Going home, Slim reminded her good-naturedly of the time she'd taken him to a woman novelist's lecture, and insisted he sit it out.

So now the missus and Slim have an understanding. No more duck hunting for her—no more lectures for him. They decided each to his own taste.

It's because they can agree to disagree like that, I think, that

Slim and the missus get on so well—content to stay home nights together, enjoying one another's company over a glass of beer and a game of chess.

From where I sit, we can't all enjoy the same things—but we can share those little pleasures that we do enjoy—a glass of beer, a game of chess, some music on the radio—and live-and-let-live when it comes to the others.

*Joe Marsh*

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America's No. 1  
Power Value—  
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You get greater value, dollar for dollar, when you buy equipment powered by Briggs & Stratton 4-cycle, single cylinder, air-cooled engines. Users and dealers rate them No. 1 in design, workmanship and materials—No. 1 in performance, economy and dependability—No. 1 in quality and availability of service.

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Also Mfrs. of the Danuser All-Purpose Blade

**HALLOW FLAME GUN KILLS WEEDS**

KILL WEEDS, crab grass, Canada thistle—stalks, seeds and roots. Destroy taro, caterpillar nests, diseased trees, grasshoppers, chinch bugs, etc. Clear irrigation ditches, split rocks, burn tree stumps. Use on portable house forgo, melt ice, thaw pipes. Safe, inexpensive. Burns only 6¢ per acre. 2400 air. Thousands satisfied users. 7 models. Write for FREE CATALOG.

**HAGUE MFG. CO., 46 South St., Brooklyn 15, N.Y.**

MARCH, 1949

planting only sufficient apple trees—on good soil—to maintain production, not acreage. There has been a big increase in sour cherry acreage. Fortunately, not enough trees have been available to supply the demand. Peaches are losing ground more rapidly than apples because peach prices in the last few years did not return a profit to producers. This is primarily due to low production from heavily pruned trees.

**KENTUCKY**—Cultural and packing methods for peaches that will control and prevent brown rot during the three days they are in transit, whether they be rolling in truck or refrigerator car, plus an added two or three days the peaches are being held in the grocery store, is the No. 1 problem facing the Kentucky peach grower.

This was one of the major problems discussed at the recent Kentucky State Horticultural Society annual meeting in Paducah.

The peach grower, as was brought out at the meeting, finally stands these losses whether he knows it or not. We are of the opinion that a chemical can be developed to use on the packing table and on the brushes of the grader that will kill the brown rot spores. Who has a product for sale now that will serve this purpose?

Two new insects made their inroads in Kentucky strawberry fields during the 1948 berry harvest—the "clipper" or "weevil" and the tarnished plant bug—causing "catface", "dwarf", and "blemished" berries. Growers at the meeting reported losses in some fields at over 50 per cent. The extension service plans to conduct several detailed spraying and dusting demonstrations for their control in 1949, using a combination of DDT and Chlordane.—*W. W. Magill, Sec'y, Lexington.*

**MAINE**—The most outstanding address during the 78th annual meeting of the Maine State Pomological Society in Lewiston was given by A. D. Pickett, chief of the Division Entomological Laboratory, Annapolis Royal, N. S. His subject dealt primarily with the control of oyster shell scale and red mite and the effect of various

(Continued on page 54)

## EXPERT EXAMINATION



Courtesy Jerry's Photo Service

Officers of Maine State Pomological Society examine fruit at annual Trades Show. From left to right: Rockwood Berry, Livermore Falls, secretary; Albion B. Ricker, Turner, president; Clarence E. Conant, Hebron, first vice-president; Donald Prince, Turner, treasurer. Effective background display designed by Edward Johnson, State horticulturist.

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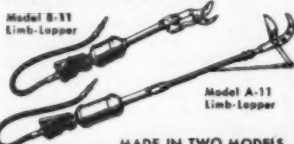


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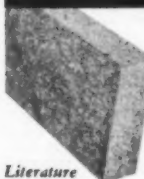
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## STATE NEWS

(Continued from page 53)

spray materials, notably sulfur, on population of these insects.

Two resolutions which received greatest attention portray the interest that Maine growers are taking in the marketing of their apples. First, they favored a change in the State apple grading law, which would require the marking of the grade and size of the fruit at retail level, in other words, carry the grade right down to the consumer. It is hoped that this step will promote better handling of apples and, more especially, prohibit the adulteration of grades and mis-advertising which is a common practice with certain retailers.

The second resolution placed the society on record as favoring a compulsory apple industry tax, and the tax plan, in the form of a bill, is to be presented to the current Legislature. If the bill becomes law there will be a two-cent tax on all apples going into the fresh market and three cents per cwt. on all process apples.

The executive committee of the society, under this bill, acts as the apple commission and is responsible for all expenditures of apple merchandising fund created by the apple excise tax. It is conservatively estimated that from \$10,000 to \$12,000 will become available. — *Rockwood N. Berry, Sec'y, Livermore Falls.*

**VERMONT**—The mid-winter meeting of the Vermont State Horticultural Society in Barre on February 10 brought together commercial orchardists and small fruit and vegetable growers from Vermont and New Hampshire. Associated with the meetings was an exhibit of McIntosh, Delicious, Northern Spy, Cortland, and consumer packages intended for gift purposes. It was the finest exhibit ever shown at the winter horticultural meetings, according to fruit growers present.

Sixty-five commercial orchardists were enrolled in the fruit growers' short course held at the University of Vermont, February 15-18. Subject matter included a detailed study of weather and its relationship to scab control as well as a study of orchard insects and insecticides. The course also included identification and study of insect injuries caused by the more prevalent orchard insects infesting Vermont orchards.

Plans are being made for the horticultural society's annual spring meeting to be held in the Rutland armory on April 1 and 2. The meeting will be held in conjunction with the Annual Fruit Growers Conference. The first commercial exhibit will be held by the horticultural society at this spring meeting. Program material includes talks on orchard cost studies and insect control as well as cultural subjects.—*C. Lyman Calahan, Ext. Hort., Burlington.*

**ILLINOIS**—The outstanding theme at all of our meetings this winter has been to try to improve the quality of the fruit grown and packed in Illinois and to try to impress on the growers that their responsibility does not end when the fruit leaves their packing shed.

Growers meetings throughout Illinois were well attended and there is considerable interest in fruit growing.

James Cummins of Dix takes over the job of secretary of the Illinois State Horticultural Society on April 1. Other officers were re-elected as follows: D. B. Perrine, Centralia, president; Dwight Powell, Urbana, first vice-president; Lester Stone, East Moline, second vice-president; and L. W. Smith, Ozark, treasurer.

To date (Jan. 29) no appreciable bud damage has occurred in most commercial

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MARCH, 1949

peach areas in the State. There is a rather heavy bud set on both apples and peaches in most orchards and unless something unforeseen happens there probably will be more fruit in Illinois in 1949 than there was in 1948.—Curt E. Eckert, Sec'y, Belleville.

**MASSACHUSETTS**—Highlights of the annual meeting of the Massachusetts Fruit Growers' Association in Worcester were an all-day pest control panel which gave growers the latest information on controlling insects and diseases. Seven specialists, five from the University of Massachusetts and two from the New York Station, presented papers on specific problems.

E. G. Christ of New Jersey gave an illustrated talk on the strawberry industry of New Jersey. He showed what the virus diseases, leaf curl, and western yellows can do to strawberry production.

Prof. Howard Rollins of the University of Connecticut stressed the need of grading as a means of getting better apples to the consumer.

Twenty-five growers qualified for membership in the "Red Apple Club" for the 1948 season. This production incentive was initiated in 1947 by Wilbur H. Thies, State extension horticulturist. It is set up on the specifications that the crop must be at least 90 per cent free from insect and disease blemishes, it must grade at least 60 per cent U. S. Fancy, and per acre yields must be at least 200 bushels on trees 15 years old or less; 300 bushels on trees 16 to 20 years old, and 400 bushels on trees over 20 years old.—W. D. Weeks, Amherst.

**MARYLAND**—Among the various topics discussed at the Maryland Horticultural Society meetings was that of diagnosing soil mineral deficiencies by tree leaf analysis.

Dr. A. L. Schrader, University of Maryland, stated that many samples of apple and peach leaves have been taken in Maryland orchards and analyzed for nitrogen, potash, phosphorus, calcium, and magnesium. Some deficiencies of potash were found, also shortages of magnesium and boron. Phosphorus did not show shortage and calcium seems to be related to shortages of other materials with no calcium deficiencies appearing in commercial orchards up to this time.

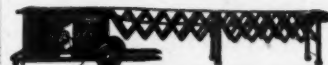
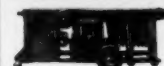
Correction of deficiencies is not difficult. For boron, apply borax to the soil under trees. Magnesium is supplied by either dolomitic limestone or by application of Epsom salts under the trees.

Secretary Truman Nold of the National Apple Institute told of the three-legged stool setup of the fruit industry in which the fresh market was one leg, the processing or by-products outlet was another leg, and the export market was the third and weakest leg. There is no immediate hope for export trade, the speaker stated, unless we want to sell in an inflated market and where no money can come out of the country. We must find new home markets for fresh and processed fruits, reaching those potential buyers who are just setting up housekeeping and starting new homes.

Things are beginning to "look up" in the Cumberland-Shenandoah section as there is under way a survey of apple and peach orchards regarding varieties, tree ages, intentions to plant and to remove, etc. A growers' co-operative processing plant is being considered, and there is high hope that within reasonable time freshly-made apple juice may be made available to city people.

If we can believe that fighting look in the faces of apple and peach growers in this area, the curculio, leaf roller, red mite, and brown rot had better get ready for a knock-down, drag-out struggle this season. And the producers are also getting ready for those anxious nights when cold weather rolls across the orchards.—A. F. Vierheller, Sec'y, College Park.

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dusty, between 1905 and 1912, grew so fast that there weren't enough warehouses to hold the boxes needed. One "house" may contain as many as 28,480 field boxes, but size depends on the shipper's convenience. Also included in the "houses" are canner's "lug" boxes which are smaller and shallower than the standard apple box.

When harvest time comes to Washington, down comes a house and the boxes are trundled into a railroad car. Last year's apple crop required approximately 16,380,000 apple boxes.

### AIFA BECOMES NACA

The Agricultural Insecticide and Fungicide Association is broadening its activities and will be known as the National Agricultural Chemicals Association with headquarters in Washington, D. C., after March 1. The new name of the Association is designed to more clearly show the modern range of farm chemical products, and in line with this expansion the organization will include, in addition to insecticides and fungicides, such materials as herbicides, hormone sprays, defoliants, fumigants, disinfectants, rodenticides, diluents, spreaders, stickers, and adjuvants.

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**MARCH, 1949**

## BOOK REVIEWS

• **Man's World (\$2.00)** Dierkes Press, by T. N. Ferris, Jr. In this, his first published book of verse, the author, a former associate editor of **AMERICAN FRUIT GROWER**, has written poems which are original in the treatment of their subject matter. He writes of everything from gardening to a board meeting, and he is sincere in his appraisal of man's world. He pokes fun at some of man's failings but one feels that he is laughing with him rather than at him. Humorous or serious and easily understood because of their simplicity, these poems often make one feel akin to the author because he has caught in verse an elusive momentary feeling the reader may have at some time experienced without being able to express it in words.

• **A Catalogue of Insecticides and Fungicides, Volume II: Chemical Fungicides and Plant Insecticides (\$5.50)** Waltham, Mass.: the Chronica Botanica Co.; New York City: Stechert-Hafner, Inc. This is the second of two volumes, the first being **Chemical Insecticides (\$6.50)** which was reviewed in the April, 1948 issue of **AMERICAN FRUIT GROWER**. It is a catalogue useful only to technologists and is sold only as a two-volume set for \$12.00.

• **Color Handbook of Citrus Diseases, 2nd ed. (\$6.50)** Univ. of Calif. Press, by L. J. Klotz and H. S. Fawcett. Prepared in loose-leaf style, the pages can be readily removed and tucked into the grower's pocket for ready reference in the field. Those owning a copy of the earlier edition, which was published in 1941, may secure a packet of the new material for \$2.50. Each disease is illustrated with a color plate, and an accompanying description gives symptoms, preventive measures, and, in some cases, control methods.

• **Chemical Specialties (\$12.50)** Chemical Pub. Co., compiled by H. Bennett, was written for the person who wants to enter the chemical specialty business. Formulas are given for the manufacture of many products, sources of raw material and equipment are listed, and methods of testing and storing raw materials, packing and shipping finished products are described.

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BOOKS FOR FARM AND GARDEN—AMERICAN AND English. We locate out-of-print books. Lists. HORTICULTURAL BOOK SERVICE, 206 Detroit, Concord, California.

THE FARMER'S PROFIT BOOK, PARTICULARS FREE. PUBLISHERS, 1931 E. 29 Street, Brooklyn, New York.

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FOR SALE—NEW INTERNATIONAL ORCHARD Tractor. Fully equipped. MOWERY'S ORCHARDS, Newville, Pa.

FOR SALE: MYERS SILVER AIR SPRAYER IN excellent condition, used part of one season. Ready to go to work. \$2000.00. 1942 Hardie Sprayer on rubber, 35 G.P.M. pump, 35 HP Washburn motor, 500 gal. tank, all overhauled since used. Was not used in 1947 or 1948 because of help shortage. \$2000.00. ROMEO ORCHARDS COMPANY, Somers, Michigan. Phone 411.

MYERS ORCHARD SPRAYER, 35 GALLON PUMP, rubber tires. Late model—good condition. HERRERT SMITH, Jeffersonville, Ohio. Phone 66228.

FRIEND SPRAYER 400 GAL. 35 GAL. PER MINUTE pump. Good condition. WEAVER BROS. FRUIT FARM, Conneaut, Ohio.

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WELL KNOWN 240 ACRE DICKSON ORCHARD AND Stock Farm. Sixty acres in orchards, eleven and twenty-eight years old. Grapes, Jonathan, Stayman, Rome, Red and Golden Delicious. Two semi-modern homes, new modern dairy barn, new garage 36' x 40' ideal for packing fruit, chicken house, shed, well-house and four driven wells with plenty water. Fifty acres woodland mostly in alfalfa, red pasture and timber. Priced \$20,000. H. B. DICKSON, R.F.D. 2, Gosport, Indiana.

125 ACRE FARM, TWO MILES OF URBANA, OHIO, on main highway, twenty acre orchard, best peach producer in central Ohio. One Hundred Dollars per acre. T. E. DYE, Agr. Urbana, Ohio.

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(Continued on page 59)

AMERICAN FRUIT GROWER

## OPPORTUNITY ADS

(Continued from page 58)

### TREE BANDS

YOU WILL SAVE MONEY AND SAVE YOUR APPLE! If you continue to use chemically treated bands on your apple trees to control codling moth—satisfaction guaranteed. Write for prices and circulars to EDWIN H. HOURS, Michigan Fruit Belt, Saugatuck, Michigan.

NURE KILL, BRAND BETA-NAPHTHOL, TREATED Tree Bands for codling moth control. Write for information and prices, M. A. KUELLER, Harry, Illinois.

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WANTED: USED SMALL POWER SPRAYING OUTFIT with hose—2 to 4 G.P.M. at 300 to 500 lb. pressure. C. A. POOL, Sidney, Ohio.

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Large crowns, Excellent roots, Moss packed, true to name. Blackmore, Klondike, Klonotype. Postage paid, 100, \$1.00; 250, \$2.25; 500, \$4.00. Express Collect, 1,000, \$6.00; 5,000, \$27.50; 10,000, \$50.00. Tenn. Shipper, Tenn. Beauty, Premier. Postage paid, 100, \$1.50; 250, \$3.00; 500, \$5.00. Express collect, \$8.00 per 1,000.

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**OTTAWA MFG. CO., 4-322 Lamm Ave., Ottawa, Kans.**

MARCH, 1949

## NEW BULLETINS

Many publications of the state agricultural colleges and experiment stations contain information of interest to fruit growers from other states. Frequently these bulletins may be obtained by writing the Director of Publications of the college or experiment station concerned. USDA bulletins may be obtained by writing the Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C. (They do not accept stamps as payment.)

● **Cherry and Plum Culture in Missouri** (Bul. 307, 1946) Univ. of Mo., Columbia, briefly outlines the various cultural methods of cherries and plums.

● **Orchard Grafting** (Bul. 439, 1944) Ontario Dept. of Agr., Toronto, describes and illustrates in detail the different kinds of grafting.

● **Pruning Apple and Pear Trees** (Ext. Bul. 381, 1949) State Coll. of Wash., Pullman, is a well-illustrated bulletin with complete descriptions of the many methods for pruning apple and pear trees.

● **Strawberry Culture: South Atlantic and Gulf Coast Regions** (Farmers' Bul. 1026, USDA, 15 cents). This is a complete discussion of strawberry production and marketing in the southern states.

● **Growing Cherries East of the Rocky Mountains** (Farmers' Bul. 776, USDA, 10 cents) outlines general directions for cherry growing for the grower with limited experience.

● **Virus Diseases of Plants** (Circ. Bul. 208, 1947) Mich. State Coll. Agr. Exp. Station, East Lansing, is a discussion of what virus diseases are and how they differ from fungus diseases.

## ● PRUNING TOOLS ● GRAFTING SUPPLIES ● TREE COMPOUNDS

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Send Today For This Unvaluable Colored Berry Book. Describes and illustrates in detail the leading varieties of Blackberries, Raspberries, Blueberries, Grapes, Asparagus, etc. Gives complete culture directions written by a leading berry grower. Tells how to grow our selected strains Townsend's Guaranteed Plants. Every gardener and fruit grower should have this book. A post will bring you FREE COPY.

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## ORCHARD TESTED FRUIT TREES

We offer only varieties that have been tested in our orchards. We practice bud selection for extra quality, color and vigor, which insures you the very best in variety characteristics. We specialize in Apple, Peach, Cherry, Plum.

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Apples Cherries Peaches  
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Introducers of: Gilbert Montmorency Cherry  
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Blackmore, Missionary and Klondike, 1000 for \$4.00; 500 for \$5.00 or 100 for \$2.00, postpaid. Premier and Aroma, \$7.00 per 1000; 500 for \$6.00 or 100 for \$3.00.

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## FRUIT TREES

Plumers  
Grapes  
Planters  
Prices. Peach, Apple, Pear, Plum and  
Fruit, Cherry. Write for Prices. Drop  
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**CHAMPION NURSERIES**  
150 MAIN STREET • PERRY, OHIO

# Ramblings

## OF A HORTICULTURIST

### Spray Time

**S**PRAYING continues to be one of the biggest and most important tasks in fruit growing. But man's ingenuity and inventive genius are gradually taking the drudgery out of this costly job.

It behooves us to stop occasionally and meditate upon our good fortune in living in this era of great scientific and technological development and to thank those who are helping to make our work and living less difficult and more pleasurable. We can, for a moment, transcend the profit motive.

This thought was fabricated after a recent visit to the Coffing Brothers' Orchard in western Indiana. The two brothers, Homer and J. D., own and operate a 500-acre fruit farm. About 400 acres of apples are in peak production, with the balance of the acreage devoted to peaches and plums.

Spraying a 500-acre orchard is no small job, particularly when equipment is not ideally suited to the existing conditions or is not the most efficient from the standpoint of speedy application and the amount of labor involved.

Cutting expenses and raising operating efficiency were just the problems that the Coffing Brothers had to solve. Their spraying method was analyzed from every angle and developments in spray equipment had been thoroughly studied for some time.

With the stationary spray plant that had been in use for many years it required 18 men to spray the orchard. With labor at 75 cents an hour, this amounted to about \$600.00 for labor only to apply one cover spray.

Could they change their spraying method and save money?

In the spring of 1948 they made the change—from stationary spray plant to mechanical sprayers. They purchased three sprayers equipped with an oscillating bank of nozzles to replace their entire stationary outfit.

Watching the boys on these spray-



Spraying in the Coffing Brothers Orchard in Indiana is now done with mobile sprayers which have replaced their stationary spray plant.

Photo by E. S. Banta

ers sitting comfortably turning on and off the sprayer when necessary, I could not help think how much more pleasant was their job over that of previous years when it was necessary to tug at long hoses and struggle to hit the top limbs.

But were these smiles saving the Coffing Brothers money? Six men are doing the spraying now, 12 less than in 1947. Consequently, labor for spraying is costing only about a third what it did with the stationary spray outfit.

The time required to make one application to the orchard remains about the same—one week. But there has been a saving in material used. It took 128,000 gallons of spray to complete the first cover in 1947 with the stationary outfit. In 1948 the three mechanical sprayers drenched the or-

chard with 94,500 gallons in the first cover.

Not only did these Hoosier growers change their spray method in 1948, but it was also the first year that their entire orchard was dusted, with sulfur, in pre-bloom applications. No liquid spray was used until the petal-fall application.

There is nothing permanent except change, and the alert fruit grower keeps in step with the times by changing his methods of operation in accordance with the latest findings and developments in the fields affecting his operations. As has often been said, the successful grower, and particularly if his orchard holdings are extensive, is a combination prophet, scientist, chemist, and businessman. It is his only sure way to success.—E.S.B.

AMERICAN FRUIT GROWER

two ways to make your harvest hum

*..Smoother..steadier!*



**Direct Drive  
Power Take-Off**

Steps up the performance of PTO-driven machines. Driven directly from engine, independent of transmission clutch. Equipped with separate clutch, controlled by lever near tractor seat. No more breaks in PTO power by transmission clutch disengagement, gear shifting or travel stops. Standard equipment on the new Oliver tractor line at no extra cost.



Here's a new crop-saving combination to hustle along your harvest . . . profitably!

One . . . the compact, big-capacity Model 15 Grain Master. Its scoop-type header takes a full 6-foot swath. From sickle to cleaning sieve, the Model 15 is packed with improvements winnowed from 100 years of experience in building fine threshing machinery.

Number two . . . Oliver now offers a convenient Direct Drive Power Take-Off as standard tractor equipment. Coupled with the six forward speeds of the new 6-cylinder Oliver Row Crop "77", this modern Oliver advancement brings you greater combining efficiency and smoothness than you've ever before attained.

Stop at the sign of the Oliver shield soon and check the many farm utility features found in the new Oliver tractor fleet . . . and in Oliver harvesting equipment.

**The OLIVER Corporation**

400 West Madison Street, Chicago 6, Illinois



## EDITORIAL PAGE

AMERICAN FRUIT GROWER

E. G. K. MEISTER  
Publisher

H. B. TUKEY  
Associate Editor

### Compensation for Deer Damage

COMPLAINTS of deer damage to orchards are increasing. From Maine through to New York, Pennsylvania, Michigan, Wisconsin to the Pacific Coast, the complaints are piling up. The damage is estimated in thousands of dollars. And the worst feature is that the damage is frequently to young plantings, where a little tasty browsing may mean the loss of an entire planting of trees just getting nicely started. The loss is more than just the value of the trees. It is the kind of demoralizing loss that represents upsetting of plans so carefully made.

Yet unlike mice and rabbits, deer are protected by law and control is not easy for an orchardist. Everything has been tried to repel deer from evil-smelling asafetida and naphthalene to windmills, acetylene guns, electric fences, and 10-foot woven fences. Lead (not arsenate of lead!) seems the only sure protection, unless some of the new materials now appearing on the market prove effective.

The question naturally arises, "Why are deer protected?" The answer, of course, is that deer are protected to satisfy the hundreds of thousands of hunters who each fall go out for a bit of recreation and outdoor living. And while few wish to deny this sport to the many who love it, there does seem to be some merit in the suggestion that orchardists who suffer damage from deer which are protected for the benefit of the public at large, should be compensated for the damage. Sheep owners whose animals are killed by dogs are compensated for the loss. Poultry raisers are likewise protected. Why not the orchardist? Hunters must secure hunting licenses at a fee. The money is already on hand.

Legislatures are in session. It requires only leadership and a firm purpose to get the job done.

### Encouraging the Younger Crop

ARE SUFFICIENT numbers of young trees coming along to maintain commercial fruit plantings is a question that deserves considerable attention, but at the same time we must not overlook the corollary: are sufficient numbers of young growers starting out in the fruit business?

According to the 1945 Agricultural Census, the percentage of farm operators less than 35 years of age is lowest for fruit and nut farms and the percentage of farm operators 55 years old and over is higher for fruit and nut farms than for any other type of farm except poultry.

It seems apparent that at least in relation to other agricultural groups we have a shortage of young men. Many states are attempting to encourage younger men by appointing young growers to important jobs and by putting them on fruit programs. These are wise steps but a more definite program is needed, starting at an earlier age with fruit growers' sons and daughters. Grafting contests, judging contests, recognition of high school and college horticultural clubs, and assistance in programs and activities will stimulate considerable interest. Fruit growing is not an easy business to get into and today's assistance to young growers and youngsters who tomorrow may be orchardists will help maintain and improve investments in land and markets which older men have spent their lives developing.

### Fruit Production at a Glance

	CITRUS		
	1937-40	1947	Feb. 1, Est. 1948-49
Thousands boxes			
Oranges, Total	89,727	110,300	99,900
California, all	48,902	45,700	33,900
Nevada & Misc.	18,845	18,900	11,400
Valencias	30,956	26,800	22,500
Florida, all	36,490	58,400	61,000
Early & Midseason	20,005	31,000	32,000
Valencias	16,485	27,400	29,000
Other States	4,335	6,200	5,000
Tangerines	3,360	4,000	4,400
Grapefruit, Total	47,478	61,630	48,300
Florida	23,920	33,000	30,000
Texas	17,468	23,200	14,500
Other States	6,070	5,430	3,800
Other	12,800	12,870	8,900



### Know Your Weather

AS MARK TWAIN said, "Everybody talks about the weather but nobody does anything about it!" Liberty Hyde Bailey tells of his father's philosophy that weather is from God and that to complain about it is blasphemy. But if we can do little about the weather and if we accept it as beyond our control, at least for the present we can know as much about it as possible and adjust our living to it.

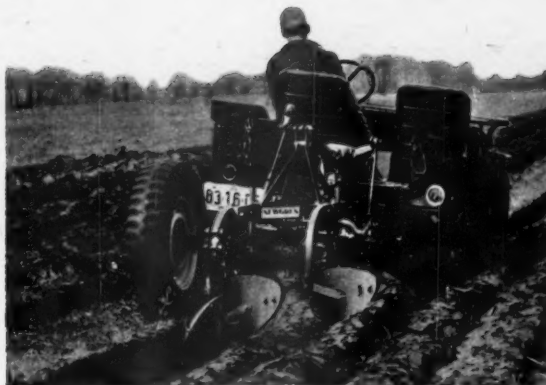
In no industry is weather more important than in horticulture. Climate comes first. The citrus industry is in California, Texas, the Gulf States, and Florida because of climate. The peach industry is in Georgia, the Carolinas, New Jersey, Pennsylvania, New York, Michigan, parts of Indiana and Illinois, and California because of the weather. The Carolinas follow Georgia; Colorado peaches come on the market ahead of California. If California peaches come earlier, they may plug the Colorado markets disastrously as in 1948. The early strawberry section of Hammond, La., is where it is because of weather. The early apple sections of New Jersey, Delaware, and southern Illinois and Indiana are located in those sections because of weather. And so it goes.

Climate is very local. Frost pockets, cold spots, hail belts, drought spots are well recognized by old timers in any given area. Weather follows general patterns, and once that trend is established it is likely to continue for a spell. Witness the series of cold blasts in southern California and the South which have gotten the habit in 1948-49 and seem to know not how to change. They will finally shift to some other path and blow that way for a period.

Insects, diseases, russetting, spraying are affected by cold, heat, rain, fog, showers, humidity, and a mixture of all in various proportions. Time of harvest, length of harvest, size, quality, and color are all associated with weather. Consumer market demand is affected by weather. The demand for lemons skyrockets with each heat wave.

And this is why successful fruit growers and fruit handlers are usually so well posted on the weather and why they are so careful in selection of sites, in choice of varieties, and in plans of operation. The weather is still uncontrollable, but we can accept it as part of the business, study it, and take full advantage of the excellent local and general services that are obtainable from the "weather man." We ought to pay him more attention than we do, to our very great advantage if we would.

AMERICAN FRUIT GROWER



**WITH 4-WHEEL-DRIVE** and low-speed down to 2 mph, the Universal 'Jeep' operates plows, discs and other implements. With hydraulic lift shown, the 'Jeep' operates standard 3-point-hitch implements.

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**ITS 6 FORWARD SPEEDS** and selective 2 and 4-wheel-drive make the 'Jeep' adaptable to low-speed towing in the field or to hauling trailers at highway speeds. The Universal 'Jeep' spreads its cost over more jobs.

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Willys-Overland dealers have the truck that farmers need—a 5300 lbs. GVW truck with 4-wheel-drive that always gets you through. The 'Jeep' Truck, with pick-up or platform-stake body on 118" wheelbase, has features you will like—economical 'Jeep' Engine... high clearance... sensible fenders... wide-opening hood... comfortable cab.

### 'Jeep' TRUCKS



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MARCH, 1949

## Start Thinking About Scab, NOW!

In many areas, successful growers rely upon the complete Dow line for an all-season fruit protection schedule. They know that Dow's dependable materials for orchard use are formulated to do specific jobs well and to work together effectively. "Mike" Sulfur (more than 95% sulfur of microscopic fineness) wets instantly, gives superior finish to fruit, gives extra thorough coverage against apple scab and brown rot. Three pounds of lime per 100 gallons increases the efficiency of "Mike".

### NEW! Parathion-15%-Wettable and Ferradow

Here are two new aids to the orchardist. PARATHION-15%-Wettable is a new, powerful insecticide that shows good promise in control of mites, woolly aphid, mealy bugs and red-banded leaf roller. FERRADOW is Dow's newest organic fungicide that has proved itself in leading orchards as an effective control of scab, brown rot and other fungus diseases. Ask your dealer or write Dow for full information on these new aids to better fruit.

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